Economics. Heating and Cooking. Bells and Whistles. A Wine Cellar. Ice Houses. Water Rams, &c. &c.

THE improvements one sees in household conveniences of various kinds now-a-days, are numerous and important. Considerable inspection of the various departments of living economy, of late, induces us to name a few, which may not be new to many readers, but to others may prove suggestive.

Heating Houses.—The length of time that has elapsed since the general introduction of coal has been so considerable, that it is astonishing so little economy has been studied in saving fuel, and employing the whole, or a greater part of the heat which is elicited in the operation of warming houses. An obvious improvement on the plan of heating dwellings we see now in frequent practice. There is much of the early fall and spring season when a little fire is necessary; those who have but one large furnace or heater, put it into operation, and ten to one the consumption of fuel is twice what it need be. To obviate this great objection, *two* furnaces are now successfully built, each of small dimensions, and alongside of each other. In moderate weather one is lighted; as soon as the cold requires, both are put into blast, the two consuming only the quantity of coal required for one, on the old plan. This is a great saving of fuel, and its economy is at once obvious.*

There can be little doubt that these furnaces make terrible inroads on our pockets. Very commonly, the major part of the heat escapes through the chimney to which it is conveyed by the pipe that carries off the gas of combustion. In every furnace built, care should be taken to save as much of this heat as is possible. To this end, the gas pipe should be carried up through the body of the house, encased as the French encase their stoves, or in some other material, such as a thin plastered wall, with openings and a draft through it. This method will sufficiently warm a hall, entry, or chamber, while in too many cases the gas is carried to an outside chimney, where, at the exit, there is constantly a stream of heat escaping, sufficient, day and night, to roast a ham; this should have been passed through drums, and a large part of it saved. As coal is now employed, it is a dearer fuel than wood in former times. True, we have more comfortable houses for our money, but the best plan of heating is yet to be invented; considering its importance, there is probably no field for inventors so vacant, and so likely to be attended with great profits.

Go into the thousands of good houses in and around our great cities; the cellar is sure to exhibit an enormous furnace blazing away the whole twenty-four hours. The cook has her range full of coal night and day; a stove or two in chambers, and probably grates in the drawing and dining rooms, are also regularly replenished. Now there is no good reason can be given why the furnace should not do

* This reminds us to say that where a very extensive range of propagating, or greenhouses, are heated by a large boiler, it is a matter of prudence to have a duplicate placed close beside, ready to be worked, if any accident should happen to the other. The expense of a second boiler would be a small percentage for security, and would soon be more than paid in the saving of the heat, which would then escape from only one chimney, instead of many, when in large establishments a separate furnace is used for every house, or two or three houses.

the cooking quite as well, if not better, than the modern expensive range. Why not unite them? The smell of the dinner will be urged as an objection on first impression, but it is utterly futile, for the odor of the cellar itself is not allowed to ascend, the air-chamber being connected with the open air, or should be entirely so. A contrivance, simple and yet effective for this purpose, is yet a desideratum in most neighborhoods, and would largely reward an ingenious man.

As regards the little cooking required in summer for tea and breakfast, economical people who can obtain it, now employ gas, which boils the tea-kettle, toasts or cooks a steak as well, if not better, than a huge coal fire; yet how very few have yet adopted this obvious improvement and economy. The same jet should heat the sad-irons, and perhaps the water for washing.

Bells and Whistles.—Convenience should be studied in every department, though we would deprecate the fussy interference which makes a toil of comfort. We have seen in many mansions a bell for the dining-room, that it may be as well to mention, as suited to every family. A piston of simple construction is placed in the floor where the master or mistress sits at meals; touching this by the foot, rings a bell in the kitchen, to hasten or call attendance. The only drawback is that the table must always be in nearly the same situation, but this is not a serious objection, as there it usually is.

Numerous bells in the kitchen confuse new-comers, and that is a numerous class, we regret to say, in this country. To insure attention to the up-stairs apartment, a bell is usually rung, before speaking your wants through a tube leading to the servants' apartment below. This confusion is now abated by blowing through a small tube, and a whistle in the kitchen cannot be mistaken in its object.

A Wine Cellar.—Some cleverly particular people may be glad to learn the best way of having their wine cellar, so that, while it is convenient, and at hand, it is always under the eye of the owner, when opened. To this end, a door is concealed in the floor of the dining-room, and is quite invisible when not in use. The lock has a well fitted brass cover, on a level with, or rather, sunk in the floor. The door should rise and be so hung by weights, as to remain in any position it is placed. Stairs lead to a wine cellar or closet beneath, to which this is the only access. The wine is brought up under your own direction and inspection, and the key returned to the person that expended the money for the purchase of the beverage. This is an obvious improvement, and may be adopted in dwellings already built, as well as in those in course of erection.

Ice-houses should be in communication with the kitchen, divided from it by double doors, or a passage. The food, milk, &c., should be beneath the ice, or in a chamber surrounded by it. In such a receptacle, perishable fruit may be kept a long time without injury, and meat will be perfectly good after many days. The water from the melting ice should be conducted to a drain near by.

Water Rams.—The extra water thrown up by rams is generally wasted, but a good contriver will make it useful for irrigating his garden, through which it may be conducted with scarcely any cost, by having a narrow board with low sides—as already described—that will move here and there, and while they stop the water, open at the same time an egress for it where it is wanted, say on a strawberry bed; complete irrigation may be practised, without any perceptible loss of time.

These hints should not be thrown away, and though they may seem little to great minds, life is short enough to make it an object to economize time and labor. In neighborhoods where much building is going on, such improvements may be well known, but there must be places where one or more of them has not penetrated.

ON THE CULTIVATION OF MOUTANS.

Few flowers have been the victims of more extraordinary caprice than these most splendid ornaments of our gardens. Long known by report and Chinese drawings, their beauty was disbelieved, till at length, some seventy years ago, the first individual of the genus made its appearance in Europe. Its hardihood once established, it bore a high price, and was the pride of the most notable horticulturists. Some twenty years later arrived another variety, P. Moutan papaveracea, which was equally and justly cherished.

Still the Chinese reports of Moutans of various colors were treated with incredulity, those already received being obviously very similar in color, differing, in fact, little more than double and single varieties of the same plant might be expected to do. When China was opened to our researches, no plants were looked for with greater curiosity than the almost fabulous Moutans. At last, but not till even his patience had experienced some trial and disappointment, Robert Fortune saw, verified, and secured the many colored Moutans which Chinese papers, seventy or eighty years before, had faithfully depicted to our incredulous eyes. The lilacs, the salmon-colored, the sulphur-colored, the whites, the rich reds, were secured, transmitted to England, and in due time met our astonished eyes. But where are they now? and in how many gardens are they to be seen? To watchful eyes they displayed their beauties imperfectly at Chiswick; still more imperfectly, I suspect, at Standish & Noble's, at Bagshot, for on visiting them (a little too late in the season, I must allow) they showed sorry remnants of indifferent flowers.

Nevertheless there exist few flowers which can at all compete with them in beauty. They may occasionally be seen in favorable situations with from one hundred to three hundred flowers upon them open at once, each seven to nine inches in diameter. I speak, of course, of the old varieties, as no large plants of the new ones yet exist, though there is not the slightest reason why they should not, except ignorance and carelessness.

A great admirer myself of Moutans, I wish to incite others to cultivate them, and therefore gladly detail my experience of their growth.

The first and great mistake is to imagine they like a light soil. No soil is too strong for them, provided it is well drained and well manured. The soil which will grow hops, wheat, beans, or melons is the only soil in which they attain perfection. Of manure they are perfect gluttons. I give moderate-sized plants a bushel of sheep dung per annum as a top-dressing, when I wish to have them in perfection. They moreover require a good deal of judicious pruning. If the branches are allowed to get too thick, small flowers are the consequence, and they will dwindle at last on old plants till they are little bigger than Gum-Cistus flowers. I have seen some of the earliest propagated plants of P. papaveracea, now upwards of forty years old, which, although large plants, present but a shabby appearance, and produce miserably small flowers.

Plants from four to five feet in diameter, when out of leaf, are large enough for all ordinary purposes; these will be between seven and eight feet in diameter when in flower, and produce from one hundred to one hundred and twenty flowers, and they may be grown to this size and well furnished in about six or seven years. I find that the ripened shoots with me vary from six to ten inches in length, eight being the ordinary growth.

I have never known the shoots injured by spring frosts but once in the last twelve years. Whenever that is the case, they should be immediately cut back

to the first unopened bud, which will grow and flower, though the flowers thus produced are rather smaller than those produced by the first growth. However, as a preventive against this accident, I watch the Moutans in the early spring, and if I find the fruit buds getting so forward as to run risk of injury, I prune them all off, cutting the plant back to the second or even the third bud. This insures a safe bloom a little later than the natural season.

Apart from this pruning, I generally cut the plants back very much, as Black Currants are pruned, immediately upon the fall of the leaf, leaving from four to six inches of wood, according to the desired size of the plant; but in this pruning regard must be had in unfavorable situations to the possible necessity of a second pruning.

With respect to situation, it must be confessed that all the low grounds of the valley of London are unfavorable to this plant. At Hampstead or Norwood, or, in fact, on any rising ground where vegetation is somewhat retarded, it will be found in greatest beauty. Light soils are unfavorable to it, especially sandy peat. It appears to do best in an open airy situation, sheltered from violent wind, and not exposed to extreme sun; the north side of a dwarf wall suits it perfectly. It should never receive any protection, except an awning when in flower, which will tend to prolong its beauty; but I must confess I prefer it perfectly exposed.

Many of the new varieties have flowered with me; all appear quite as hardy as the old ones, but there is some difference in their earliness, and, as far as I can at present judge, great difference in their habits of growth. Some appear much more compact and dwarf than the old varieties, whilst some, on the contrary, appear to be much more erect, and probably of larger growth.

Nothing would be more gorgeous than a Moutan garden, in which beds of about four feet square were devoted to each single plant. Even when out of flower, few plants surpass them in beauty and foliage.—J. R., in *Gardener's Chronicle.*

RIVERS'S ROSE AMATEUR'S GUIDE.

We gladly welcome the new issue of this very useful and now famous guide. The continual changes that take place in public taste, the ever altering claims of varieties to general favor, the capital, the worthless, the useless new sorts, the results of experience in cultivation itself and many other matters most interesting to the grower, require as much vigilant attention and careful pruning as a first class rose-bush itself. We are glad to see that Mr. Rivers has used his editorial hoe to some purpose by weeding out weeds, and well stirring the ground about the sterling varieties; nor has he been less attentive to rendering his instructions so clear and precise, that even those who run may read. There is a good deal of novelty about roses in pots, and much useful information concerning stocks, the most debatable and perhaps least satisfactory question that the rose grower has to consider. That the eternal Dog Rose is a very bad stock for some kinds is undeniable, as rose buyers know to their cost. But what is there better? Upon this point Mr. Rivers writes as follows:—

"The Celine stock, a very old hybrid Bourbon rose, is a most excellent stock for Bourbon, Noisette (particularly the Cloth of Gold), and many other roses; if planted in a rich, moist soil, it will make shoots from four to five feet in height, fit for low standards.

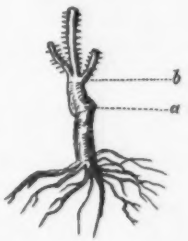
"The Rosa Manetti is a rose I received some twenty years since from Como, from Signor Crivelli, who recommended it as the very best of all roses for a stock. It was raised from seed by Signor Manetti, of the Botanic Garden at Monza.

All the roses I have budded on this stock have succeeded admirably; above all the Hybrid Perpetuals, which scarcely seem to know when to leave off growing and blooming in the autumn; indeed it is remarkable for its late growth, for it may be budded during the whole of September. Another excellent quality is, that it never gives any suckers from its roots at long distances from the plant, like the Dog Rose. It seems to flourish equally in light and dry as well as in stiff soils; and it will, I trust, be of much value to the rose amateur, who, if the soil of his rose garden be light and dry, is so often troubled with the numerous suckers thrown up by the Dog Rose. I am, indeed, now fully convinced that the only method of cultivating dwarf hybrid perpetual roses in soils that are gravelly, sandy, or resting on chalk, is to employ the Manetti Rose as a stock.

"Since the above paragraphs were written, more experience with this has been gained. Although so vigorous in growth, it does not form good standards; the stems with their side branches left on increase rapidly in bulk, but when they are budded at the height proper for standards, and the side branches cut off, the bark becomes indurated, the sap apparently ceases to circulate freely, and the stems in a year or two shrink, and the head becomes stunted in its growth and unhealthy.

"Some of the vigorous growing hybrid China roses make good half-standards on this stock, but its great eligibility is for dwarfs; these should be budded close to the ground, and, when transplanted from the nursery, should be planted so as to cover the junction of the bud with the stock, placing that part about one inch and a half or two inches below the surface of the border.

"The annexed figure will illustrate my meaning better than a host of words: *a*, junction of the bud with the stock; *b*, the height to which the stem should be covered with earth. Treated in this way the covered part of the stock increases rapidly in bulk, the sap flows freely through it, and most vigorous and healthy growth is the result. I have observed a peculiarity in this stock worthy of notice; under certain circumstances the sort budded on it will entirely overpower its suckers, so that in a year or two the plant from the bud will gain the ascendency, and the suckers, without being removed, will languish and die. This has occurred here in several instances with stocks planted out, for stocks for propagation, in a stiff clayey soil; some of these had dormant buds in them, which had not put forth their shoots with the usual crop of plants, and were thrown on one side as stocks. Now the curious part of the matter was, that immediately these stocks were planted out for stocks in a stiff soil, and so deeply that the dormant buds became slightly colored with earth, they pushed forth most vigorously; and, although the stocks at the same time put forth suckers which were suffered to grow, they have, as may be seen now in most instances, overpowered them, and now form vigorous bushes of hybrid perpetual roses, from three to six years old.



"To what a great extent in this respect it differs from the Dog Rose stock will be at once apparent to rose-loving readers; for we all know that the Dog Rose carries on a fierce war with its bud in graft, and, unless most carefully attended to, destroys it by its suckers in one season. A method of growing standard roses in dry, unfavorable soils, with the aid of the Manetti stock, may be practised by those who really love rose culture; some robust-growing, hybrid China roses—Madame Pisaroni and Duc Decazes are two vigorous growing varieties—should be budded on strong Manetti stocks below the surface of the

soil, which should be removed for the purpose; from each bud one shoot should be encouraged and supported with a stake, and all others carefully removed. The second season of growth the stems thus formed may be budded with hybrid perpetual roses and others; they soon form nice healthy stems."

A PLANT CABINET.

A "PLANT CABINET," while it scarcely aspires to the dignity of a conservatory, possesses the attractions of one, and gives the family of the possessor as much pleasure as a more expensive arrangement.

A bay-window, in one of the most frequented rooms, suggested itself as a suitable place for bringing the plants as they bloomed, from a small green-house too distant from the dwelling to be visited in bad weather.

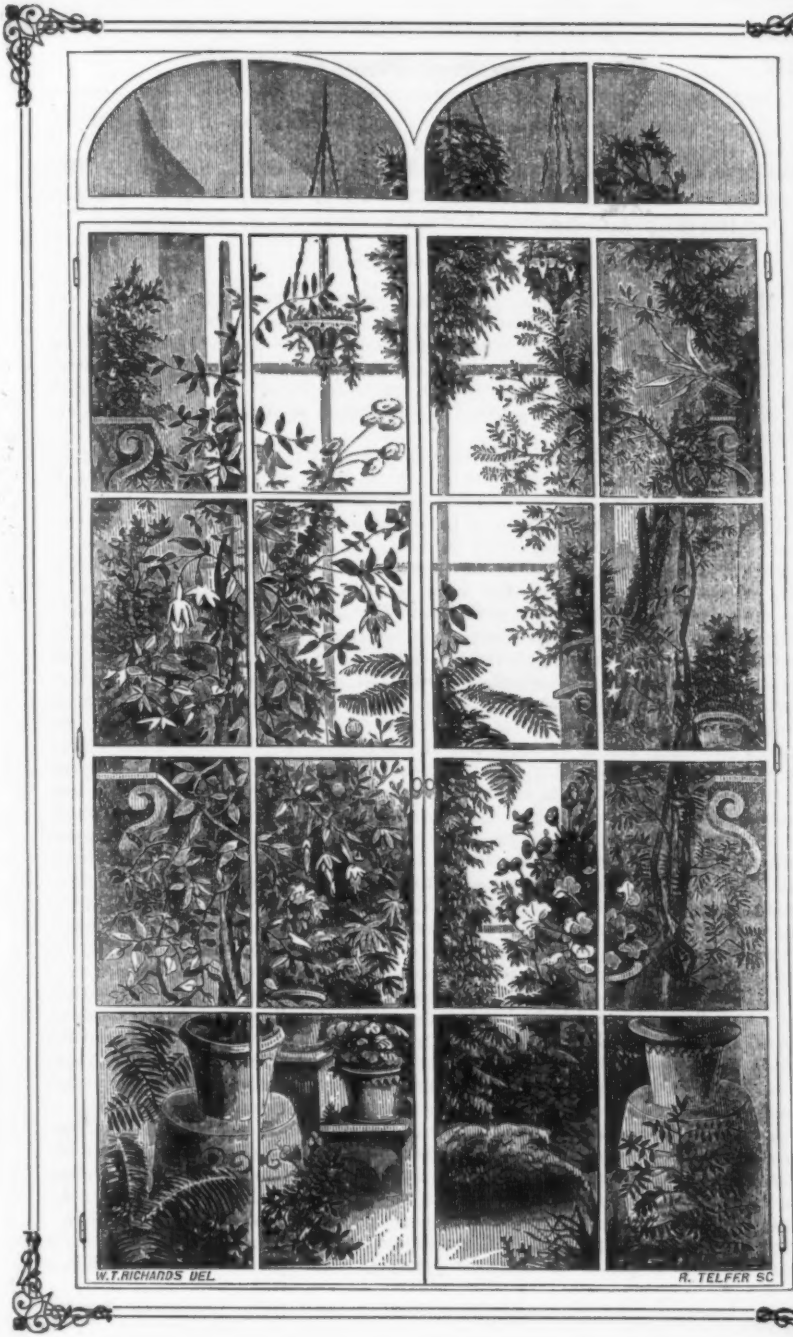
Simple glass sashes to fit the opening were procured; they open like a double door; shelves on one side support the plants, and small wooden brackets screwed on to the walls here and there, assist to furnish this little jewel of beauty. In the centre is an ornamental post, of red cedar varnished, up which climbs two different colored Maurandia Barclayanas, and the top is ornamented with a golden fern. In front are seen two China seats; on these are placed ornamental long-stemmed climbing plants, and hanging vases assist materially in the effect. During winter the cabinet is gay with the finest camellias and other flowers. Chrysanthemums, at the proper season, give it their peculiar attractions. In short, there are few plants that are not exhibited in succession; even orchideous, and other tender varieties, are introduced with success. In extremely cold weather the door is left a little ajar to admit the warmth of the room, especially at night, and the thermometer has not yet fallen below 45°.

The whole cost of fitting up this beautiful case, exclusive of the flowering plants, did not exceed twenty-five dollars. It gives completeness and beauty, and an expression to the house that could be produced in no other mode so cheaply. But it has a higher object; it embues all connected with the mansion with a love of flowers, and gratifies many senses. A pair of Canary birds are sometimes let out of their cages to enjoy the liberty of the cabinet.

Cowper, in his happiest manner, has alluded thus to the love of Nature's works:—

"The love of Nature's works
Is an ingredient in the compound, man,
Infused at the creation of the kind.
And, though th' Almighty Maker has throughout
Discriminated each from each, by strokes
And touches of his hand, with so much art
Diversified, that two were never found
Twins at all points—yet this obtains in all,
That all discern a beauty in his works,
And all can taste them."

By introducing such a cabinet into a sitting-room, the beauties of nature are made accessible in the severest season. There would be no necessity of having a green-house to resort to, to fill such a case; without leaving their comfortably warmed rooms, ladies can attend to their pets, which by employing water in dishes for the sake of the evaporation, will possess as healthy an atmosphere as the gardener's case. As much light as possible should be given. The cactus tribe would thrive here remarkably well.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REMOVING PEAR-TREES TO PROMOTE FRUITFULNESS—MR. RIVERS AND THE BELGIAN PEAR SCHOOL, &c. &c.

BY L. B., NEW JERSEY.

Mr. Editor: You called my attention to the notice of Rivers' catalogue contained in the *Gardener's Chronicle.* Mr. Rivers is a very experienced pomologist, and his information is indeed useful, the more so, because also *practical.* The method of transplanting trees, to bring them into bearing, where recommended by me to my friends, never met with their approval; therefore, I never mentioned it in print; but I beg to avail myself of the remark of Mr. Rivers, to say a few words about it.

In England and Belgium, where the climate is usually damp, and the soil nearly always wet throughout the entire spring, there is no danger in transplanting a thrifty young tree, if the process be done with care; as, for instance, the new hole ready made, and the tree transferred to it with a clump of earth, having most of its roots safe, and then planted with the usual care we bestow upon that delicate process. In this dry and absorbing atmosphere, still more caution is needed, and success is not so certain. But I can show by experience that a tree, chiefly on the quince root, taken up in some part of your grounds, and carefully transferred by wheelbarrow, or handbarrow, to its new place, when the operation is performed on a mild spring day, and the soil being in good order, is in no danger whatever, and that this is, indeed, the *best* of all methods to throw a very thrifty variety into bearing. With pears upon quince root, one transplanting in two years will have the desired effect, almost always the first, and certainly after the second removal. But in no cases should the tree be transferred to a great distance, and the dirt all shaken out. It requires patience to take up the tree, so as to leave part of the earth, at least in the centre of the root's cluster, and the roots uninjured, excepting at their extremities, where the knife must *clean* the broken or smashed parts by a neat diagonal cut. If the tree was, previously to the operation, at a proper depth, it should not be planted any deeper; and the *filling* earth should be mellow and clean, so as to fill easily all interstices. By means of such precautions, I never lost a tree, and have brought many too luxuriant growing varieties, into bearing. It is safer than pinching, as it keeps the tree in better shape, and at once disposes the slow *fruit branches* to mature their incipient buds, which, in some varieties, require three years to become actual *blossoms.*

To the removal "at the end of October," I should have no objection, if the holes have been prepared beforehand, and a mould of mellow earth kept ready on the side of the hole. But, with our severe winters (which is not the case in Great Britain), I always prefer the spring. The operation succeeds as well, and there is no danger from deep freezing, too much moisture, or other drawbacks of no consequence to established trees, but sometimes very injurious to *removed* trees.

A word about his description of pears. He is right in presuming that *Duc d' Orleans* is the same as *Conseille de la cour;* which is the same as *Maréchal de la cour!* how all these mistakes occurred, it would be hard to explain; most of them are the result of the slovenliness and neglect of Ferdinand de Meester, an old invalid, and by no means a temperance man. By his carelessness and inattention, labels have been lost, changed, and transferred to other trees; after Van Mons' death, desirous to please his heirs, he presented them with many *new* varieties,

which he knew to be already *named*. When Mr. A. Bivort came in possession of Van Mons' seedlings, many trees, among the thousands, had no label nor designation whatever; and being naturally induced to think that these unlabelled trees were *inedited*, he gave names of his own to them, as he had a perfect right to do, not knowing that such trees had already been named *once*, and, as in the case with the Duc d'Orleans, *twice* by others. However, under his careful and skilful management, such mistakes will occur no more. We should undoubtedly have been made acquainted with some new valuable and inedited fruits had its model pear-school not been twice visited by terrible hail-storms in the course of the last two years, which cut down almost every fruit from the promising seedlings.

Prince Albert is evidently of the Passe Colmar group, or family, and will, perhaps, not suit our climate, as the offsprings of that group are nearly all inferior to the European standard; so are Alexandre Lambré, Fondante de Noël, &c., at least as far as tested here. The Colmar and the Passe Colmar themselves, the heads of the family, never do come up to their European value. But *Prince Albert* is indeed such a fine pyramidal grower, as to be entitled to a fair trial before being discarded.

Let our trees grow older, *more mature*, and we shall undoubtedly obtain better and more steady fruit.

WEIGELIA MIDDENDORFIANA.

BY W. C. STRONG, BRIGHTON, MASS.

I HOLD the Weigelias in great regard, and while I have readily admitted that the Roseas and Coræensis, or Amabalis are perfect, in their way, I have still longed for the Middendorf, or Yellow. During the last two or three years I have received plants under this name, from different sources in England and France. They have proved in all cases to belong to the family of Bush Honeysuckle, producing small and very insignificant yellow flowers. This variety was discovered in Japan some years ago, and from thence sent to France, and disseminated throughout England. It seems to be very similar, if not identical, with the Diervilla trifida of our woods. As I have seen no description of the true Yellow Weigelia, I have thought it probable that this Diervilla has usurped its place, in this country; and as I now consider myself fortunate in possessing the genuine, I send you a description, which may serve to correct erroneous impressions.

The general habit of the plant and appearance of the foliage is much like W. Rosea, the latter being of a lighter green, and less wrinkled than W. Coræensis. But the flowers are very distinct and dissimilar. These are produced in clusters of five, upon long stems, thrown well up above the foliage, so as to be very conspicuous. Flowers monopetalous, five-lobed, lobes extending one third down the corolla. In shape, it somewhat resembles the Mimulus, being in size about one and a half inch long from the calyx to the tip of the lobes, and from one to one and a half inch in width across the lobes. Color, a clear pale yellow, the centre lobe being mottled and dotted with bright orange. Stamens reaching to the mouth of the bell, and united by their anthers. Pistil still longer, and crowned by a large cap-shaped stigma, five-lobed, answering to each stamen. It appears to be very free flowering, and vigorous in habit.

And now, having this new color, it seems a very easy matter, and almost certain that by hybridizing with the other kinds, a great variety and combination of colors may be obtained. Who will get the first?

CRANBERRY CULTURE.

The kind most known and best adapted to all kinds of soil, is the Bell variety or Egg shaped, and most cultivated in New England. A round variety raised about Cape Cod is a larger fruit, handsome, and only grows on very wet, marshy land, and not as well adapted to general culture; there are also several other varieties which mature late, larger fruit than the Bell variety, but not as productive. They can be propagated from the seed, or from cuttings or by transplanting. The last method is most frequently adopted. The first crop obtained by planting the seed will be one or two years later than that produced by transplanting. When cultivated, the berries are large and abundant; after being gathered, they turn from light scarlet to deep red, and sometimes almost black. They will keep a very long time if not gathered too early—they should remain on the vines until it is necessary to gather them from the frost—they should be properly dried by spreading them thin for three or four weeks; they can then be packed and sent to any part of the world. If gathered too early, while some of the berries are green, they will not keep.

The soil most suitable for their growth is low, moist meadow land that is not too cold and spongy. In that case, a drain should be cut to let off surplus water, which should always be within twelve inches of the surface, and sand covered over the top three or four inches will be of service, although not indispensable where it is not easily procured. When the ground is uneven, sand can be carted on to level it. They also do well on muck or any poor swampy land, where nothing else will grow; they grow naturally on watery bogs and marshes—on the border of streams and ditches, and by draining wet land and then taking off the top of the ground to remove the wild grass or vegetable matter and carry to the manure heap; then cart on beach or other sand to the depth of two or three inches to level the ground and to prevent grass and weeds from choking the vines, and to keep the ground loose around the plant. They bear abundantly on marshes covered with coarse sand, entirely destitute of organic matter of any kind, but accessible to moisture—on pure peat covered with sand, and on every variety of soil, except clay liable to bake or become hard in dry weather, on soil that can be worked with a plough and harrow; it can be prepared as you would do it for planting out garden and other plants; sometimes it can be burnt over, so as to get it in a condition to set out the plants. They can also be raised on moist loam where corn and potatoes will grow, but not so abundantly on dry or sandy soil unless covered two or three inches with muck or spent tan. No animal or vegetable manure should be used, as the fruit draws most of its moisture from the atmosphere. The poorer the soil, the less cultivation is needed.

If you have a peat swamp and design converting it into a cranberry yard, your first step to be taken is to find a level that is not too wet, and then clear off the turf or grass sods, and bring the rest of the swamp to the same height. When it is thus cleared and levelled off, it is not then ready for the reception of the vine.

Should the vine be planted, it will do well through the winter and spring, but in the hottest weather the peat will bake and become hard; it will therefore be impossible to take in the moisture of the atmosphere, which is absolutely required by the vine. The absence of this moisture will cause the plant to die, and thus both labor and money are lost. This will be prevented by leaving the prepared swamp exposed to the action of the frost for one winter, when it will, after it is thawed, crumble and present a light gravelly appearance, the largest lump of which will not exceed an ordinary pebble. When the swamp has thus been treated, it will not afterwards bake and become hard; its surface will be light and porous.

When vines are planted, it is often the case that in the summer following they will appear as though they were dead; and the cultivator, having this impression on his mind, will take them up, believing that it is impracticable on his soil to raise any fruit.

The plant is very tenacious of life, and if there is but half a chance it will take hold and live, though it may not yield much fruit. These vines should not have been taken up, for it is evident that their natural stunted appearance was mistaken for death. They ought to have remained in the soil at least another year, when it could have been fully determined whether they were living or dead.

The Bell Cranberry is that which is mostly desired by cultivators, but even experienced men are often at a loss to distinguish the vine on which it grows from the Bugle or the Cherry. If found in the middle of a swamp in its wild state it will invariably throw off the runner toward the driest part of the bog. Hence it is found on the edges most frequently. When it is transplanted and brought under cultivation, it is true to the same law, and will send its suckers up the banks of the yard, and these will yield well. The inference drawn from this is, that it can be cultivated on upland soils adapted to its wants, even should it not be overflowed, and is therefore best adapted for general cultivation. Lay out the grounds as you would for setting out cabbage, strawberry or other plants—have a pointed stick or dibble, and make a hole for the plant—have the roots immersed in muddy water so thick as to adhere to the root—place it in the hole from three to four inches under ground, and press the dirt very closely around it. To have the rows uniform, draw a line and put the plants, 18 by 20 inches, in rows—where small patches are desired which can be kept clean with a hoe; the nearer they are together, the quicker they cover the ground—but where acres are planted it will save much labor by putting them 2 to 2½ feet apart, then a plough or harrow can be used to keep out the grass and weeds. After one or two years' cultivation to keep out the grass, they will take care of themselves. At 18 inches apart, it will take 19,000 plants; 2 feet 10,000; 2½ feet, 7,000 plants to the acre. They can be planted out in the fall at the North from September until the ground freezes, or in the spring until the middle or last of May. At the South and West, if possible, they should be planted out in autumn and December; if received too late for planting out, the roots can be covered with dirt in a box or in a cellar (but not in the ground out of door) until early in spring. As it is often late before we can start the plants, and the great press of freight often delays them beyond a desirable time, if not ordered in the fall, they will always be forwarded as early as possible in the spring. The transportation of 10,000 plants to Chicago, Cincinnati or Harrisburg will be about $2—1,000 to 5,000 plants, from $1 to $1.50. Where land for Cranberry culture can be overflowed (which is by no means necessary), fall is the best time to plant them out, but where there is no overflow, I am satisfied that they can be planted out in early spring as well as fall. Every family can have their garden patch in that case, and in dryish soil grass, meadow muck or tan around the plant will be beneficial

to retain the moisture. They are highly ornamental in pots—the fruit hanging on the plants until the blossom appears for the next crop. The first year they often bear 50 bushels to the acre, and increase every year, until sometimes they bear from 200 to 300 bushels per acre, perhaps the net average is from 100 to 150 bushels per acre. They usually bring from $2 to $4 per bushel—never less than $2—this year they are worth from $4 to $6 per bushel. Cultivated fruit is less likely to be affected with drought than wild fruit. One man with a rake made for the purpose will gather from thirty to forty bushels a day, with a boy to pick up the scattering ones.

Any information wanted further than is given above, will be furnished on application by letter—and orders for plants will be promptly attended to, and packed in moss so as to forward them safely to any part of the Union.

PRICES.—Under 500 plants, 50 cents per hundred; under 5,000 40 cents per hundred; over 5,000, 30 cents per hundred; over 10,000, $25 per thousand. Dealers supplied at a discount. F. TROWBRIDGE, *New Haven, Conn.*

[The cultivation of the Cranberry is so important an item in the history of horticulture that we have requested liberty from Mr. Trowbridge to publish his lucid account. We recommend this fruit to the attention of our readers, as one of the most profitable articles that can be planted, and the cultivation of which promises, from the regular demand and high prices, to be permanent. We answer in this way several queries that have been put; as a parlor or green-house plant, the Cranberry is highly ornamental.—ED.]

PREPARING SOIL FOR PLANTING.

BY CINCINNATUS.

DEAR SIR: I am quite an admirer of your monthly calendar of operations, and hope you will not quarrel with me for saying that I consider it the very best part of your work. I think, however, that a little more care exercised in its compilation or composition would aid the credit of its author, and increase its already extensive usefulness. I would not have it supposed that I make these remarks in any carping spirit; the errors that we occasionally see committed, are evidently the result of haste, which the writer himself would I am sure observe if a little more care were bestowed on his efforts. It struck me that as a new year was about to commence, it would be a good time to make the suggestion, which I am sure will be received in the spirit in which it is offered.

As an instance of what I refer to, a recent calendar taught that fall planting was much to be preferred; but that unless it was performed early it was objectionable—all of which I consider very orthodox. In the November No. we have the idea continued: "Trees may yet be planted in sheltered situations," but "the ground must be thoroughly prepared." "To prepare the ground the practice is much commended to prepare the holes now, throwing out the soil and leaving it exposed to be acted on by frosts; by that means it will obtain a friability not otherwise easily obtained." The writer must admit that waiting for the frost to mellow the soil, is an ill method of effecting early fall planting. Even as a preparation for spring planting I should be disposed to join issue, and take my position on the ground of its being all moonshine; it has the shadow of rationality in its favor, but little if anything more. Formerly, great stress was placed on the necessity of summer fallowing and winter freezing in preparing the soil for the service of the husbandman; but these ideas are now pretty generally laid aside as

relics of the barbaric age of agriculture. In the case of light soils fall ploughing is universally considered by our most scientifically practical agriculturists, as positively injurious. In very stiff or wet soils the practice of fall ploughing continued longer in favor, until it was found that such soil so treated, was heavier in summer, when lightness and friability were much needed, than the same soil ploughed in spring. This led to investigation of the causes, and it was discovered that the frost—the power that disintegrated the soil, and, for the time being, rendered it friable—also decomposed the numerous vegetable fibres, roots of weeds, and past crops; and thus had an injurious influence on that summer friability of much greater importance. But the more modern, and as I think more accurate conclusion is, that all such treatment of soils is mere cobbling, and unworthy of our age. If gentlemen wish to render soils friable, they now do it firstly by draining, then by adding silicious and vegetable substances. Depend upon it, if you are about to plant a tree in a soil, which frost will have a beneficial effect on in the way of rendering it friable, you had better not plant it. In such a soil, first get it drained, then go to the nearest woods and get a wheelbarrowful of decayed leaves, and to the public road for a barrow of well washed sand to mix with your stiff soil, then you may go ahead without hesitation. The mechanical constitution of the soil is a matter of first importance, and in such an affair as tree planting should be performed in a thorough and lasting manner. Turning it up to freeze is but a very temporary affair at the best, and unworthy of being considered a commendable practice.

I have chosen this subject to remark on, because I think the recommendation of your correspondent in this case, shows less of that haste to which I frequently refer what I deem errors in his advice. I remember with what hesitation our hard-fisted gardeners received his recommendation to banish the rake from their collection of tools, because raking soils fine made it bake in dry weather. They very justly thought that soils that were of a nature to bake when finely raked, would bake nevertheless, no matter in how rough a state the soil might be left after cropping; and that the proper mode of procedure would be rather to ameliorate the soil, than to take revenge on the harmless implement.

SOME THOUGHTS ON PEAR CULTURE.

BY WILLIAM BACON, RICHMOND, MASS.

ALTHOUGH the culture of the pear on the quince is gradually extending, and though, under favorable circumstances, each year brings new evidence of its practicability, the cry with many still is, "it never will succeed." If the trees do well for a few years, they will be so small they never can produce much, and in a few years will soon die off.

In my early days, tree planting was a hobby with me, and I rode it until the highway through the ancestral premises was well lined by trees of different species; and when the work was done, I regretted that there was no more territory to occupy, because the trees of the wood were not all represented in our home-made avenue. How often was I told then that our labor was vanity; that my trees would not live, or, if they did, they would never come to any size in my day. In part, the prediction was verified. Through my boyish inexperience (no other cause whatever), a few of them died; with the fall of the leaf, however, their places were supplied, so that soon every niche was fully and beautifully occupied. Now these trees are tall and stately. Youth would call them old trees;

they are admired by all. Many a traveller, on a sultry day, has found them a blessing. When the tempest roars, and the storm beats down, they are a protection to the adjoining lands; but those far-seeing economists that folded their hands, and pitied my folly, and warned me by their kind counsels, when, with toil and sweat, I planted out these trees, have no such beautiful creations of their own to look upon. No; "I wish I had such rows of trees, and if I had known I would have planted." Now, is it altogether improbable that similar results will yet show themselves in the matter of dwarf pear culture?

The winter of 1856–7, taken in its length and breadth, was the most trying one for fruit-trees we have ever known. Apple, cherry, and plum-trees, suffered from its rigors, and were seen in unusual numbers, standing naked through the shooting forth of spring and verdure of summer; yet, in a plantation of sixty dwarf pears, I lost but a single tree, and this not from the fact of its being a pear on the quince, nor from the undue severity of the season, by any means. On the contrary, our dwarfs came out as uninjured, so far as I can judge, as so many young mountain oaks; all of the fifty-nine remaining trees have made all desirable growth. On several, I have measured well-matured shoots of the last year's growth more than four feet long, which is all a reasonable cultivator can ask. Some have borne fruit enough to pay their first cost, if it had been marketed, but it was too good to sell, and quite good enough to eat.

Thus much I have spoken from the experience of the past. I take courage from it, and anticipate a triumphant future. But in speaking of my success, I have said nothing of the soil and management—two items in fruit growing of special importance, but which are quite too much passed over in talking about trees.

First, then, the soil. This rests on a bed of limestone (so far as we know) of impenetrable depth. Over this is a firm, hard pan or clay subsoil, and, uppermost, a clayey loam.

Before planting the trees, and as a preparatory work, I spaded the ground full ten inches deep, and, as far as possible, inverted it—*i. e.*, put the top soil at the bottom, and brought up a new soil, never before disturbed by plough or spade. The land was in good cultivation, but no manure was applied the year the trees were planted out. The trees were obtained mainly from the reliable nursery of Messrs. Ellwanger & Barry, of Rochester, N. Y. In making the order, I was not particular to call for large trees; only good roots, with reliable tops. The trees were received in April, and planted out, so that the junction of the stock and scion should be as low as the surface. I kept the soil clean, with the hoe, around the trees (other crops being on the land, but not near enough to interfere with the trees), and this was all the attention I gave them until autumn. Of course, no watering was given when they were planted, or at any time during the summer, some part of which was dry. In autumn, I put probably a bushel of well rotted manure around each tree. This served to protect the most tender part (the point where budded) from extreme cold, and turned off surplus water from heavy rains and melting snows. In the spring, this manure is taken away from the body of the tree, and spread so that the extending roots will have the benefit of it. I spade our ground, yearly, as near to the tree as we can without interfering with the roots, and subject the surface to frequent stirring through the summer.

I have been thus particular, that none may be led astray in this matter of dwarf culture—a system in which, on proper soils, and with proper varieties, I have much confidence; yet I doubt much if it will succeed on all soils to the satisfaction or profits of the cultivator. Nor do I think it adapted to all varieties.

With us, some kinds do much better than others, though we have no particular reason to complain of any kind we have tried. Nor will it answer for all cultivators. There certainly are those who think, judging from their actions, that when a tree is set, their whole duty is done. No wonder that, with them, putting out trees don't pay. They may surely expect that their trees will die in self-defence. All fruit-trees require watching and care, and especially so the dwarf; but it is a pleasant care, and a watching that does not fatigue. The full reward follows the labor.

HYBRIDIZING THE GRAPE.—CONCLUDING ARTICLE.

BY AUGUSTUS D. ROGERS, SALEM, MASS.

Much encouraged by the present trial, with a view of obtaining a still greater variety of choice grapes, adapted to *open-air culture* here, and for wine making, we have again, the last spring, hybridized a few of the best of these hybrids with some of the best foreign sorts, as the Muscats, Queen of Nice, Rose Chasselas, Hamburgh, Syrian, Gross Malaga, &c., and await with much interest the result. The conclusion is, that it will be many years before any large amount of superior varieties can be obtained fit for open-air culture, in this N. E. climate, *free from all* the imperfections of the native, and *combining all* their good qualities.

A description of some few of the best fruits of these hybrids may not be uninteresting.

1. The best grape of them all has a bunch, medium size. Berries, oval, like Black Hamburgh. Size, about the same. Skin, tender, and somewhat spotted or marbled. Color, reddish brown. Flesh, soft and juicy, with scarcely any pulp, with a sweet, rich, peculiar, aromatic flavor, of extra quality. (This grape is sweet *some time before ripening.*) Ripened, first season of bearing, only two bunches, about 20th September, ten days or more before the Diana; second season (much improved, with two or three dozen bunches), about 10th October, about the same time, or earlier than the Diana. Isabellas here all cut off by frost, &c.

The vine is among the four most vigorous of the whole lot. Blossom, perfect; sets every berry. Long filament. Wood, short-jointed, and perfectly hardy. Foliage, resembling native.

2. Another grape is of medium size bunch. Berries, nearly round, or less oval than B. Hamburgh—more resembling native; larger than Diana. Skin, soft and tender. Color, brownish-red. Flesh, soft, and very sweet, retaining a very slight trace of the native. Ripened both seasons, as early, if not *the earliest* of any. First season, about 10th September; second season, latter part of September; much improved, second season, in size, and otherwise. The earliest in the garden in 1857, two or three weeks before the Diana or Concord growing near. Vine, a great bearer, both seasons, and perfectly hardy.

3. Another grape is of medium size bunch. Berries, in shape and bunch, resembling more the native. Color, like the Isabella. Size, large as B. Hamburgh. Flesh, when ripe, soft. Flavor, sweet and rich. Ripened, first season, the earliest, about first week in September; second season, about 10th October, much improved in size and quality. Vine, a great bearer, and one of the two most vigorous of the lot.

4. A grape very similar to the foregoing one, excepting in shape of the bunch and berry, both like that of B. Hamburgh. Ripened, first season, 10th Septem-

ber; second season, 20th October, greatly improved in size of berry. Second season, vine perfectly hardy.

5. A grape with bunch large, and somewhat shouldered. Berries, long, oval, larger than B. Hamburgh. Skin, thin. Color, yellowish-white, with reddish flush on one side. Flesh, with little or no pulp, juicy, of an aromatic flavor. Ripened about same time as Isabella, first season; this (second one), before it. Wood of vine, quite short-jointed, perfectly hardy.

The above five grapes were all of the B. Hamburgh hybrids.

6. A grape of the Sweetwater hybrids. Bunch, good size. Berries, larger than Diana. Shape, like Sweetwater. Skin, thin. Color, just before ripening, resembling Sweetwater; when fully ripe, flushed with red. Flesh, juicy, and delicate. Flavor, very sweet and aromatic. Ripened about 20th September, first season; second season, about 10th October—improved since last year. Vine, a good bearer.

Two or three vines of this Sweetwater variety came into bearing last season, for the first time, showing but a few bunches, nearly equal to in quality, and a little earlier than the best grape (No. 1) before described, but of a smaller bunch, mostly flushed with red.

Among the B. Hamburgh hybrids are some kinds promising to be fine wine or table grapes.

One with bunch large, and shouldered. Berries, quite large. Skin, moderately thin. Color of the B. Hamburgh. Flesh, when ripe, with little pulp, juicy, with high vinous flavor. Quality, extra. Ripened, first season, with the Isabella; last season, did not quite ripen—same as Isabella. Vine, perfectly hardy, and vigorous, with short-jointed wood, and a great bearer, both seasons.

Another grape, bunch compact, large, and shouldered. Berries, close-set, quite large, of size and appearance of B. Hamburgh. Skin, rather thick, like native. Flesh, tender, of a red color, and juicy, of a strong, vinous flavor. Ripened both previous and last season. Vine perhaps the most vigorous of the lot, perfectly hardy, and a great bearer.

Several others came into bearing the past season, promising to be very fine. One, with the largest berry of any of them, but did not quite ripen. Another, with the handsomest bunch (only one) and berry of any of them, shrivelled just as ripening, but bids fair to be one of the very best.

Among the remaining ones, not particularized, are many nearly equal to some of the best described, and others of comparatively middling, and a few of inferior quality. Comparing them with the Concord Grape growing near, under high cultivation, most of the inferior class are decidedly its superior in flavor and size of the berry, the only good qualities of the Concord here, in a favorable situation, being its fine, well-set bunch, and hardy habit. Its flavor is rather harsh, and quite foxy, ripening a little earlier than the Isabella, about same time with the Diana.

A good quality, noticeable among most of these hybrids is, they never drop their fruit, like the native species, including the Isabella and Diana, about the time of ripening. Undoubtedly, they will all improve under better cultivation and more room, growing in common soil, and within six to twelve inches apart.

Having thus endeavored to give a fair statement of this experiment, and some account of its fruit in an early stage, we should bear in mind "that in raising and blooming seedling plants in this way, there is one point which it appears to be of importance to keep in view, and that is, whether it be fruit or flowers, the real properties and qualities of the seedling are not at first to be detected, and, therefore, no hasty conclusion should be arrived at as to its merits."

A GROUP OF SUMMER PEARS.*

BY L. B., NEW JERSEY.

VERY few of our summer fruits are hardy, well-shaped trees, though nearly all are good bearers. Madeleine comes first in eating. In Europe, as far north as the 55th degree of lat., it ripens always at the end of June or beginning of July; here it does not ripen before the 15th or 20th of July under the most favorable conditions. It is nearly always a juicy, sweet fruit, lacking spice and aroma, but uniform in quality; like all old varieties, it is disposed to crack, and must be picked six or eight days before it shows any signs of ripening. The tree is a good bearer but of drooping habit, and hardy enough in some localities.

Next in season, but first in quality, comes the Beurré Giffard, in our opinion the best of our summer varieties. The tree is almost unmanageable. Its straggling habits do not admit of a pyramidal shape, unless by close and constant watching and pruning. Once in a tolerably erect shape it is easy enough to keep it under control. It is a good and constant bearer. Its fruit is undoubtedly the most valuable if not the very best among the early varieties. Although it is advisable to pick early, five or eight days before maturity, it ripens well on the tree; but at the least change of color it ought to be picked immediately.

About two weeks later the *Rostiezer* comes to maturity; another straggling, unsightly tree, unless well pruned when young. It is a good bearer and one of the best fruits of the catalogue. Its only objection is its small size. Our engraving represents a middle sized fruit; under good cultivation, with a moderate crop, it is often larger.

Manning's Elizabeth is a most delicious, juicy, small fruit; it is constantly good; rather best; we never found an inferior fruit among a large crop. The tree is more steady in its habits and grows handsomely. It was originated by Mr. Robert Manning, the old correspondent of Van Mons, and I believe came from one of the inedited numbers sent to Messrs. Dearborn and Manning in the early part of this century.

Bloodgood and Dearborn's seedling are too well known to require a description; they are general favorites in our markets. The Dearborn was named *Dones* by Van Mons, at least we must presume it, as the grafts were sent to him, and as the Dones proves to be identical with the Dearborn in all its characters. Perhaps the name was lost when Van Mons received the grafts, or else we could not well account for such liberties taken by a man who, at that time, was in possession of the richest collection of seedlings in Europe.

Beurré Haggerston ripens at the same time; it is a brisk, vinous, juicy pear, a favorite with many who like subacid better than sweetness and high flavor. It is also called *Limon*, and came from grafts sent by Van Mons to Messrs. Dearborn and Robert Manning. The name was lost, as was often the case in those days of slow navigation. The original (found out afterwards) was Van Mons.

No. 8, or *Bergamotte Louis*. It is a good bearer, but succeeds better on the pear stock than on the quince.

Nearly all the summer varieties are early productive on the pear stock, and can be brought into fruiting much easier than our later varieties.

Next to those we shall point out the Tyson, the Ott's seedling, the Doyenné de Juillet or Doyenné d'Eté, the Beurre Goubault, and the Kirtland's Beurré, as among the very best of our summer varieties.

* See Frontispiece.

THE GRAPE.

BY HENRY LITTLE, BANGOR, MAINE.

IT is fortunate that people are turning their attention to the cultivation of this most desirable fruit. A lively interest is beginning to be awakened even in this northern border. *We* have greatly needed very early ripening varieties. For many years past, we have been searching for hardy and high-flavored grapes which are so early as to be *sure* to *ripen* in any of those Northern States. I trust these efforts have at length been crowned with success. Early varieties have been found suited to our wants in open culture, of the highest flavor, and even rivalling some of the choice foreign varieties which require to be grown under glass, and some of them the aid of fire heat, also, to bring them to perfection. This requires an expenditure of time and money, which it is an object to save, if grapes of as high flavor, early ripening, and having all other desirable qualities equal to the foreign, and cultivated only in open culture, can be had. The introduction of the Delaware and the Rebecca Grapes will probably form a new era in grape culture—at least, in this State, and probably in the United States. Most of the old varieties have proved so late as to be nearly worthless here.

The White Sweetwater, in favorable locations, will so far ripen its fruit as to become tolerable. The Isabella will not ripen unless in favorable years, and never so as to equal its flavor when grown further south.

Of the newer varieties, we are planting the Diana, which is a fine flavored fruit, and is about ten days earlier than the Isabella. The Concord, which has been so highly recommended, ripens about the same time. The Hartford Prolific is about a week earlier than either, and for that reason is valuable for northern localities. It will not rank as "best" in flavor, but it has other good qualities. It is exceedingly productive, hardy, and is a very rapid grower. It will thrive under ordinary treatment in less favorable locations, and requires less attention than most other varieties. For these reasons it will be popular; but probably the *Delaware* and *Rebecca* will be the favorites of the million, and the palm will readily be yielded to them.

DIOSCOREA BATATAS.

A CALL made by Mr. W. F. Fall in this journal, 1857, p. 564, has produced several replies of interest to the public; the whole would embrace a larger space than we have at command, and we propose, therefore, to abridge them, giving the substance of each.

This new esculent has scarcely had a fair chance. It was taken by the hand in a manner which could not fail to make us fear that it was about to be quacked into notoriety. The mode in which it was advertised was sufficiently indiscreet, to use a mild phrase, and many who paid for the small tubers thought themselves badly used. A cry was raised against it which we are not yet prepared to sanction. The potato is giving out; with the same reason might the declaimer against this old standard vegetable now attempt to cry it down. It is decidedly unwholesome, say some of our physicians; it is decidedly unprofitable, assert a

larger number of agriculturists. If new life cannot be infused into it, what are we to do? If, therefore, a substitute can be found it will be a boon of the highest value; that it is a duty of the journalist not to unjustly disparage what may be proved of infinite value to millions, is self-evident. With a feeling of the necessity of care in this respect, we now take up the mass of manuscripts which have been accumulating for the past two months, and we yield the *pas* to W. B. Prince, whose grandiloquent advertisements did not win confidence; he claims the right to be heard, and says:—

FLUSHING, January 20, 1858.

TO EDITOR HORTICULTURIST: It is to me quite amusing to find some one still ushering forth his doubts. I refer to the attack on the *Dioscorea batatas* by Wm. F. Fall, who I will show has had *no experience whatever* in regard thereto. On April 24th last, we forwarded twenty tubers, value $5, to Mr. Fall per his order. These he received, and planted some time in May, six weeks after the proper period for planting them. Notwithstanding this late planting, however, long before the period for digging the roots, Mr. Fall denounces the plant as a failure. Whilst others, who have cultivated this root for four years, have confirmed every encomium that has been bestowed upon it, he, with only a few tubers, and without possessing one single root, has annihilated all its claim and demonstrated its utter worthlessness in a less number of months. Having witnessed the exhibition of splendid roots weighing one and a half to five and a half pounds, at the numerous autumnal fairs, and Mr. J. G. Sickles having exhibited eight roots weighing thirty-three pounds, and Dr. Darnall having stated that he has grown forty-five thousand tubers and twelve hundred large roots, the produce of two years, from six tubers he obtained from me, and having received from the American Institute their silver medal for the roots I exhibited at the Crystal Palace, I feel now well satisfied with the rapid progress of this esculent, so pre-eminent for its azote and albumen over every other grown upon our globe. WM. R. PRINCE.

Three witnesses now make their appearance who have had poor success with their tubers. G——, Westchester, Pa., imported from France a small lot of Dioscorea, which arrived about the middle of March, 1855, in fine condition. Twenty-five were at once placed in pots, to be put out as soon as the weather would permit, and the balance sold. Ground was thoroughly trenched and manured, the tubers were planted in April and received every attention, but on taking them up in November, digging down five feet perpendicularly by following a rope-like tuber half an inch in thickness, the ends of only two were reached. These as well as the others increased in thickness towards the lower ends, which were flattened and pointed at the ends so as readily to penetrate the hard sub-soil. A few were left in the ground to test their hardiness, and were slightly protected, "but they never made their appearance on this side the globe again."

A "Pennsylvania subscriber" found the tubers had increased to three inches in circumference at the thickest end—a large increase. He had one cooked, and thought it equal to the best potato. The remainder were hung in a paper bag in the cellar and forgotten. In the spring they were sprouted, but shrivelled. They nevertheless grew and twined their stems around the poles to a height of three or four feet. The roots, in the fall, were quite as fine as those of the previous year, but the old shrivelled roots had decayed; he thinks tolerably well of the article as "agreeable and nutritious," but he enters, very properly, a protest against the mode in which they were advertised.

Mr. John G. Bubach, who dates from Princeton, but mentions no State, procured tubers of the size of peas, planted in pots and thence in prairie soil, well pulverized. They received the best cultivation, but when he dug them the largest was not more than three-fourths of an inch in diameter at the largest point; four-fifths of the whole length was a mere string. These were planted the following spring, divided into pieces several inches in length, but the same result followed, if indeed the roots were not rather smaller than before.

Such has been the experience of others, but many have been more successful. The next witness whom we deem it proper to introduce is one for the defence, and he makes out an excellent case, such as should "give pause" for time to develop more fully the value of this root. We give our space to the telling of the story, only abridging it of particulars that are unnecessary to recapitulate.

Dr. F. Hollick, of Staten Island, who appears to have had a single eye to the truth, relates his experiments and their results, as follows:—

"In the spring of 1856, I made an investment of *three dollars* in the new root, for which I obtained a small tin box, about three inches by two inches, half-filled with mould, in which, after close inspection, I discovered *twelve* small tubers and bits of root, each about as large as a pea. To tell the truth, I considered them *very small potatoes* indeed, and planted them with no great expectation as to the result. The ground they were put in was a poor, clayey, soapstone soil, with a small quantity of stable manure dug in; it was, however, well trenched. Each *set* was put in a small hill of wood mould, and the hills were three feet apart, as I wished to give them a chance to run. Well! I watched these hills very carefully, but saw nothing till the 4th of *June*. Then, two leaves appeared in one hill, and, three days after, two similar ones on another. None others put forth till past the middle of June, when they came up in all the hills but three, thus leaving me but nine plants. Of these nine plants, I lost three more by an old hen, who scratched them up. The six grew above ground *very slowly* and *weakly*, except the *two* first, and these were three feet long by the end of June. They all continued to grow till frost, when the average length of the four weakly ones was about three feet, and, of the other two, probably ten feet. During the summer, the ground was kept free from weeds, and occasionally hoed; only to the two strong ones I gave two or three good soakings of liquid manure, in July and August.

"When the vines were killed by the frost, I proceeded very anxiously to dig them up, to see what was *under!* Having heard that they went down *deep*, the spade was sent the whole length of the iron, and the *hill* thrown up. The *crop* was something *astonishing!* In the two best hills there were nine roots, averaging about four inches long, and as thick as a man's finger. In the other four hills were eight more roots, each rather less than those from the two first hills! And this was all, except seven small tubers (like peas) which had formed in the axils of the leaves on the vine that came up first, where it got covered with earth. I was quite *sure* there was nothing else, for I dug all over carefully, as deeply as the spade would go, and examined closely. A humbug I now thought it, of course. A friend suggested that perhaps I had not found *all;* so I began at one of the hills again, and after getting down about eighteen inches, I discovered the *top* of a piece of root, which exactly fitted the *bottom* of the centre one I had first removed, and which I then remembered looked *raw*, as if *broken off*. I traced this root down! down! till I thought the *end* never would come. At thirty inches from the surface, I at last touched *bottom*, and turned out the remainder of the root—a piece about twenty inches long, an inch in diameter at the top, and three inches in diameter at the bottom. Adding to this the piece first obtained (about six inches), I had a root *twenty-six inches long!* gradually enlarging from less than a quarter of an inch at the top to three inches at the bottom. There was still some inches long of thin root by which it reached the surface, which I did not reckon. It resembled a large *parsnip* growing wrong end up, only the surface was fine, and covered with minute rootlets. All the others were now similarly examined, except the *meanest* of all in upper growth; and as the ground was then freezing hard, that was left unexplored.

"In the next best hill, I obtained a similar bottom piece, about fourteen inches long, making a whole root of eighteen inches in length, but rather thicker than the first. One of the other three hills gave up a root ten inches long, and the other two averaged eight inches, all thinner than the two first. I thus made a discovery in *every hill*, and one that surprised and pleased me.

"The largest root was boiled ten minutes. The skin peeled readily off, like thin tissue-paper, and revealed a mass of snow-white farina, perfectly light and dry, which all pronounced *excellent in quality*—in fact, *delicious*. It was so much relished, I had to secrete the stock to preserve it. To my taste, it was like a mixture of first-rate mealy potato with ground almonds. My family all decided they would give up potatoes at once, if enough of this new substitute could be obtained.

"The following spring (1857), my man began to dig the ground over where they had grown the year before, and, to our great surprise, turned up another root, in the unexplored hill. This was, altogether, about twenty-one inches long, and had remained in the ground all that severe winter entirely unhurt.

"I now divided my stock into one hundred and twelve small sets, but lost about thirty from the following cause: When cut, the fresh surface is covered with thick, white, gummy milk, which hardens if left in a dry place; but not knowing this, and being then unprepared to plant them, they were put in a damp cellar, and thirty of them rotted. They should have been well *dried*, and kept dry till planted.

"In the last week in March (1857), my whole stock was committed to the earth. They were now planted in a still poorer, cold, and wet place. They vegetated in May, but seemed not to make much growth till July, when the majority were about equal to my two best hills of last year. The ground had been manured with *fresh* stable dung, and some *guano*, both of which are hurtful, at least when used at the time of planting, and near the surface.

"In the early part of May, while hoeing on the ground occupied by the Dioscoreas the year before, I was surprised to see a fine, vigorous vine, from a *chip* broken off in the digging up, and left in the ground all winter; or, it might have been one of the axillary tubers. At all events, it made the earliest and most *vigorous* growth during the summer, and, in the fall, produced one of my best roots. My main bed was planted one foot apart each way, and during the whole of the summer, the top growth was quite meagre, on the whole. The first week in November I dug up again, and the average yield was about the same (one hill with another) as the average of my first six hills; but, by *layering* many of the vines during the summer, I obtained a good number of axillary tubers. I have thus got from my original three dollars' worth quite a stock—enough to plant probably a quarter of an acre of ground, with a few for tasting. The result, on the whole, has given me a good opinion of the Dioscorea, and I think that, when the cultivation of it is better understood, we shall succeed well with it. My own experience tends to show that it should be planted *in the fall* or early in spring, and that, if any manure is used, it must be well decomposed, and must not be in contact with the root in the early stages of its growth. It should, in fact, be put at the bottom of the digging, and that should be at least thirty inches deep. Above all, the ground should be light and *deep*. Any hardness in the soil, or any obstruction whatever, seems to hinder its growth both by preventing the vine from shooting up, and, also, by twisting and dwarfing the root.

"Now, Mr. Editor, here is the result of one small experiment. Let us have all the light we can, for I cannot but think the subject is worthy of *thorough investigation*. I should particularly like to know if any of your readers have tried

the Dioscorea with *other manures*, and if so, what were they, and how used? also, the kind of soil they were planted in, and the season when planted?

"One of my best roots grew with nothing but good, light, wood soil, and no manure. Now, gentlemen, you who have experimented, tell us all about your *Dioscoreas* [and be as brief as possible—ED.] MEDICUS."

The last testimony we deem it important to produce, is that of Andrew S. Fuller, of Brooklyn, N. Y., who states that his own experiments have been quite satisfactory *wherever he planted pieces of roots;* that they must be left two seasons in the ground; that the same root does not continue to enlarge the second year, but that, after throwing out its new roots, it decays. If thus treated, on the two seasons' plan, it will yield as much per acre as has been claimed for it, or more than double the common potato. He plants in rows two feet apart, and six inches apart in the rows, which gives 43,560 tubers per acre, allowing only one pound each, "which is far below the average," and has 43,560 pounds per acre, or more than five times the average of the potato. He thinks the depth it attains is advantageous, inasmuch as it is by that occupancy of otherwise waste ground we get so heavy a yield.

The testimony, on the whole, is sufficiently favorable to induce a continuance of the experiments. It is still a question whether those who took much pains to ridicule this edible root and made their fortunes by the Sorghum and Imphee seed, will not have to change their tactics. The Dioscorea is still in repute both in France and England, where they talk of eight and eleven tons to the acre. This journal has waited for facts: in the case of neither plant has a proper or permanent solution yet been arrived at among us. Meantime we must be patient and hear again from such careful observers as Dr. Hollick, and especially let us learn what have been the results of experiments at the South with Dioscorea.

A TRIP TO CUBA AND THE SOUTHERN STATES.

No. 10.

NATCHEZ, MISSISSIPPI.

NATCHEZ is pre-eminently the "Persia of roses." In no part of the Union have we ever seen them attain such perfection and beauty. It so happened that we were in this Paradise at exactly the "happy moment," the 4th of April, when there was a *gush* of bloom that was as delightful as surprising.

The best exhibition was at the garden of Mr. Andrew Brown, on the river, a short distance above the town, sheltered by a high bank. Here reside Mr. and Mrs. Brown, in the handsomest garden, without exception, we have seen for many years. Both are enthusiasts, directing and enjoying to the fullest extent their beautiful domain, and by their liberality and goodness in dispensing novelties brought at great expense from long distances, have created a gardening spirit in this region. The entrance view of their long garden vista tells the story at once; an eye accustomed to looking after effects is delighted, and knows what to expect.

After this *coup*, the details are highly satisfactory; the borders of each bed, where we should depend upon box edgings, are formed of dwarf pompone roses, little miniatures of a few inches in height, and all of them in the fullest bloom. Nothing of the kind can be more beautiful; it blooms all winter except January, and is an evergreen. Mr. Brown's Chromatella, Luxemburg, La Reine, Belle Isidore, Solfaterre, Cloth of Gold of a really gold color, it was difficult to designate, and we had to ask their names, so very superior in size and color are they

to the same kinds at home. The Sanguinea climbs to the height of eighteen feet over evergreens that add to its beauty. Moss roses are quite superior to those of Paris. The Gloire de France was never exceeded anywhere. Reine de la Gultare measured thirteen inches in circumference. Myrtle is used for borders and hedges, and over these clamber in wild luxuriance the Red Hermosa and the Lamarck. Ivy seems as if it would encircle every mound and tree, knowing no limits.

Then the fruits; peaches, pears, plums, fig-trees as large as our apple-trees, all conspire to carry the garden lover out of his former experiences. Grapes damp off, and though Mr. Brown has planted long acres of them, he has not a satisfactory return. The Pittisporum is cut like box bushes, and was full of bees and bloom. The evergreen magnolia has been made much of in this garden, and Mr. and Mrs. Brown deserve great praise for showing what a garden may become with intelligence and love of the subject. Mr. B. is a correspondent of several learned societies, and has done good service to science by exploring the geology of the Mississippi Valley.

Coniferous trees have not been much introduced here, but they have an evergreen substitute of extreme beauty and value. The *Gloria Mundi*, as it is here usually called, is a feature that with care in other matters makes the gardens of Natchez rival the finest in England. It is the *Prunus Lauro-cerasus*, growing as rampantly as the Osage Orange, and may be trimmed into every shape. The finest effects are produced with it as single plants, avenues, and hedges.

Though Camellias, &c., will live in the open air, at most of the first class places conservatories in fine order will be found.

After visiting many beautiful, nay, superb residences, we passed a day at the beautiful seat of General Quitman, where hospitality and refinement rule supreme. An elegant mansion, fine garden, and park-like grounds commanding fine views, first impress the stranger, but an introduction to the owner is an event to remember. General Quitman posseses more mementos of the high estimation of his countrymen than any man we know, and he has filled more honorable offices than we can enumerate; so that it is somewhat difficult to address a gentleman so full of titles. You may say Governor, General, Congressman, and a long list of epithets without going wrong. We were shown the numerous swords presented to him, and were astounded at the display. Commander of the City of Mexico, General Quitman has a set of superb pictures of the place, and others of the successful battles in which he fought. A fine and productive garden is found here, the General understanding all its details. A very valuable library leaves nothing to desire.

We must only enumerate the beautiful residences of the millionaires of Natchez, or we shall run such riot as will leave no space for our valued correspondents.

Natchez being on a high bluff, enjoys the reputation of a healthy situation, and here resort the wealthy cotton planters of this region, uniting to form a society that has few if any superiors in the world for intellectual cultivation, elegance, and refinement. The following are the country-seats we saw:—

Dr. Mercer's, Laurel Hill; Gen. Quitman's, Monmouth; Mrs. Williams', Ashland; Mrs. Ogden, Kenilworth; Mrs. Dunbar, Hawthorn; Judge Boyd's, Arlington; Major Chotard's, Somerset; Mr. McMurran's, Montrose; Mr. Marshall's, Richmond; Dr. Duncan's, Auburn; Mr. Shields', Montebello; Mrs. Elliot's, Devereux; Mr. J. P. Walworth's, The Burn; Mr. Surget's, Clifton.

We are afraid to trust ourselves with any further description of Natchez, and leave its hospitalities with regret, only adding the single remark, to avoid its hotels.

Our next number must conclude the reminiscences of this highly interesting "trip."

CONSTRUCTION OF GLASS HOUSES.

BY WILLIAM SAUNDERS, GERMANTOWN, PA.

THE construction of glass houses has undergone much improvement during the last twenty years. The change from the angular to the curvilinear shape, introduced a simple and superior method of forming glazed roofs. Not that the curved outline does, in itself, possess any important advantages; but the system of glazing with large glass in slight fixed rafters, not only admitted more light, but was cheaper than the older method of heavy rafters and sliding sashes. The expense consequent upon the formation of curved rafters, did not, in effect, render these houses less expensive than the old method, but there was the gain of more light and less opacity, and this, I am rather inclined to believe, is the only superiority such houses possess; and, that angular houses constructed on the same principle are much cheaper and equally efficient.

I have for several years adopted this system of glazing roofs, and as it is the cheapest and *best* mode of erection that I know of, I annex a description of the manner I usually have them put up; so that those who have been deterred from erecting graperies and green-houses at eight and twelve dollars per foot in length, may be enabled to do so at one-half of these rates.

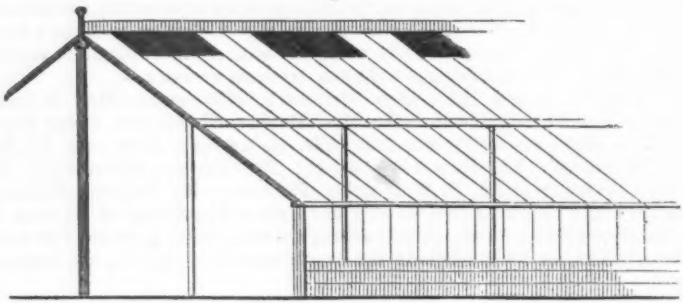
Single roofed cold graperies may be put up in a rough but substantial manner at even lower rates than these, but if the best American glass is used (as it ought always to be) and the wood work planed and painted outside, they will cost from four to six dollars a foot in length, varying in price according to the height and width of the building, and the material used for foundation.

Fig. 1.

Fig. 1, is a section of rafter one-half of full size. These are made out of sound, clean, inch thick best white pine boards, sawn out in strips three inches wide, and prepared for glazing. They are then fitted on the bottom and top wall plates, and permanently fixed. Their distance apart will depend upon the size of glass; I find 10 × 14 a convenient sized pane; to suit this the rafters will require to be 14½ inches apart from centre to centre. In glazing, the concave surface of the glass should be turned outwards, to throw the water into the centre of the pane. There will be little or no leakage or drip in a house glazed in this way.

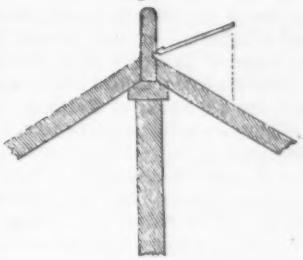
Fig. 2, represents part of a roof fixed for glazing. About the middle of the

Fig. 2.



roof a purlin is run across and supported by uprights and posts; any degree of strength can thus be given. Ventilation is secured by hinged shutters or glazed sashes near the top of the roof, and by openings in the front wall below the glazed portion. Ample space for airing ought in all cases to be provided. A span roofed house should have means of ventilating to the extent of a three feet opening the whole length of the house. The top ventilators shut down on the rafters, they are hinged to the ridge, and to prevent leakage, they shut into a slight groove, as shown in Fig. 3. Houses constructed in this manner are not only neater in appearance, but are better adapted as plant habitations, than those built with heavy rafters and sliding sashes.

Fig. 3.



AN AMATEUR'S VIEWS ON THE PROPAGATION OF NEW VARIETIES OF FRUIT.

BY W. CREED, ROCHESTER, NEW YORK.

WITHIN the past few years much has been said and written, and numberless queries propounded in respect to the adaptability of certain varieties of fruit in particular localities or soils, or for the purpose of gratifying those who may desire to enter upon any enterprise in this direction; and while discussions upon these points have been continued without intermission, the idea of propagating new varieties from seeds has not received that share of intelligent support which the subject deserves, to make it popular with the public mind.

Whatever may have been the theory or success of various distinguished pomologists, either of ancient or modern times, in respect to this very interesting branch of culture, we will not weary the reader by speculating upon it, but merely give our views, in the hope of attracting more attention to its importance, as well as hold out a prospect of success to those who may experiment in a right direction.

Our first impression, then, upon the amateur's mind as an index to the propagation of new varieties, is the great contrast observable in habit, wood, foliage, fruit and seeds of each distinct class of fruit; this will lead us to other thoughts. Now, if we take the pear for illustration, and select a few varieties at random, such as the White Doyenne, Van Mons Leon le Clerc, Louise Bonne de Jersey, Bartlett, Stevens's Genesee, and Duchesse d'Angouleme, those who are familiar with them will be instantly reminded of the contrast spoken of; but the most important contrast in these distinguishing points, so far as the propagation of new varieties is concerned, is in the seeds themselves; take up your knife and help *quarter* a pear from each of the above varieties, compare the seeds, and the contrast will be equally as convincing as in the fruit, foliage, &c. In reference to the seeds, however, we may expect that ninety-nine in a hundred in any particular variety closely resemble each other in shape, form, &c., *peculiar* to *that variety*, and producing *seedlings* exhibiting a *close affinity to each other*, and, therefore, not likely to result satisfactorily to the experimenter; but as soon as we find a marked difference in the *formation of a single seed* in any selected variety, *that seed* should be chosen by the amateur, for *in that seed* (which apparently is one of nature's freaks) is the symbol (in embryo) of a new variety, whether "good,

very good, or best," will be left for Providence to work out; man also doing his share in the matter. Another part of the success, it is evident, will depend upon the choice of the best varieties, from which to select one of these "freaks," or "sports," which are more or less traceable throughout the whole classification of vegetable physiology, and intended by an all-wise Being to excite the wonder and admiration of man, prompt him to energetic action, and to study out the workings of Nature in all its beauty and complicity.

Experimenters should also be again reminded of the possibility of having to cut up quite a quantity of Bartletts, &c. &c., before meeting with a seed so distinct in formation or appearance from the generality of seeds, to warrant its choice to propagate from. Those, therefore, who may be liable to mourn over this *destruction* of pears, should find a substitute in the apple, and as this fruit is quite liable to these "sports," and in frequent use for culinary purposes, it offers a good opportunity to closely inspect the seeds.

To test seedling pears at an early date, graft scions upon the Angers quince stock, and the probability is a new variety may be known at two, three, or four years from grafting. Apples may be forwarded in the same manner by grafting upon the Paradise stock.

SELECT LIST OF SUMMER, AUTUMN, AND WINTER PEARS.

We are frequently asked, about this time of year, when so many amateurs are thinking of their plantations, to furnish a select list of pear-trees. The following will be a safe guide:—

P, indicates the sorts that do best on pear stocks, and Q, those that experience has taught are most suited to the quince or dwarfs.

Summer.

p. Madeleine.
q. Beurré Giffard.
q. p. Dearborn's Seedling.
p. Manning's Elizabeth.
q. Doyenné d'Eté.
q. Osband's Summer.
q. Haggerston.
q. p. Julienne.
q. Tyson.
q. Rostiezer.
q. Ananas d'Eté.
p. Bartlett.
q. p. Belle Lucrative.
p. Brandywine.
p. Bloodgood is too poor a grower to be much recommended. We should prefer the Cabot, the Henkel, the Baronne de Mello, instead.

Fall—Early and Late.

q. Duchesse d'Angouleme.
q. Beurré d'Anjou.
p. Flemish Beauty.
q. Urbaniste.
q. Kirtland's Seckle.
p. Seckle.
q. Andrew's.
q. B. Superfin.
q. B. Diel.
q. Howell.
q. Louise Bonne.
q. p. B. Clairgeau.
q. Buffum.
q. B. Hardy.
p. Church.
p. Huntington.
q. B. Langelier.
p. B. Bosc.
p. Sheldon.

To which can be added:—

p. Kingsessing.
p. Doyenné Boursoc.
p. Onondaga.
p. Chancellor.
p. Heathcott.
p. Washington.
p. Abbott.
p. Ontario.

Winter, or Late Fall.

p. Doyenné d'Alençon.
q. p. Niles.
p. Lawrence.
q. Glout morceau.
p. Beurre d'Aremberg.
q. Vicar of Winkfield.
p. Dix.
p. Colmar Nelis, or Winter Nelis.
q. Bergamotte Esperen.
q. B. Bachelier; rather a *fall* pear.
p. Columbia.
q. Jaminette.
q. Easter Beurré.
q. Leon Leclerc Laval.

We fear that Church and Huntington, and some others, cannot be found yet in the nurseries. If the grafts of some of the new pears can be got, it would do well to cultivate, or, at least, to test them. An attentive reader of these pages will remember others of great promise, such as the Alexander, &c. &c., which well deserve consideration; but a greater variety than the above will not be necessary, and they are such as have been well tried and approved.

An amateur will endeavor to make a selection which will embrace as many seasons of maturity as possible. A few who desire only such as will ripen while they are at their country residences, and do not desire to be hampered with the care of the winter varieties, will adopt the two first lists. *See* the mode of ripening adopted by a Boston vender, in the notice of the Massachusetts Horticultural Society in the last number, page 89.

A PREVENTIVE FOR WOOLLY APHIS.

Aphis lanigera.

BY WM. P. HARDEN, DOWNING HILL NURSERY, ATLANTA, GEORGIA.

This is, undoubtedly, the greatest enemy known to the apple-tree. They seem to destroy the tree by attacking the roots under ground, and not the tree above ground, as is supposed by many. As far as my observation goes, they are perfectly harmless as long as they confine themselves above ground to the body and branches of the tree; or, at least, out of hundreds of trees that I have examined that showed signs of injury from these insects, not a single one but had the aphis in abundance among the roots.

After experimenting with various substances, in search of a remedy, without success, I tried pulverized charcoal (the kind used was the cinders from the pipes of the common locomotive), with complete success. This remedy, though slow in its action, is certain. It was applied by removing the earth from the roots around the body of the tree, then freely applying the charcoal. No danger need be apprehended of applying too much, as it is entirely harmless to the tree, yet so offensive to all kinds of insects, or even animalculæ, that they cannot live long in, or even very near it. Charcoal, being an indestructible material, continues to act for an indefinite time, thereby becoming a preventive as well as a remedy.

Again: It not only acts as an absorbent, retaining the volatile gases (valuable food for plants that would otherwise be lost), but makes one of the very best substances ever used for mulching, as it is, for reasons given above, entirely free from the objections that obtain to ordinary substances used for that purpose, which afford a kind of harbor or protection for different kinds of insects that finally attack the tree. This remedy has been only tried on the apple-tree. It is very probable that it would protect the roots of this kind of fruit from the various insects with which they are infested.

INSECTS, NO. 4.—APHIS, OR PLANT LICE.

BY J. STAUFFER, MOUNT JOY, PA.

This prolific and obnoxious family of vegetable parasites is interesting, on account of its anomalous character, being considered viviparous during the summer, and oviparous in the autumn, by that distinguished entomologist, T. W. Harris, M. D. Vincent Köller also informs us that Schmidberger collected eggs of the Apple Chermes (C. mali) which hatched in March, on plants in his room. This may be true of some species, but will not apply to others, which, if not always viviparous, are rather pupiparous, and not oviparous, as stated.

Stephens, in his *Systematic Catalogue of British Insects*, has recorded forty-nine species of the genus Aphis alone, and others belonging to several cognate genera. Six genera are given, by Westwood, of the family Aphidæ, viz: Aphis, Lachnus, Atheroides, Erisoma, Adelges, Thelaxes, and perhaps Brysocrypta. It has been proved, by Reaumer, that in five generations (and it is supposed there are twenty in a single season), one Aphis may be the progenitor of 5,904,900,000 descendants. Maunder says ten thousand million millions are thus generated in one season.

The species reside in great societies, upon almost every species of plants, sapping the vital currents of their juices, inducing sickness, gangrene (or the growth of fungi), and death of the plants so infested, in numerous instances; and when not killed, they are greatly impeded in their growth from the exhaustion sustained by these parasites.

The following cut illustrates our common species, found infesting our gardens and orchards. A brief notice of each figure, in the numerical order engraved, shall be given, and such remarks made as the facts in the case seem to call for:—

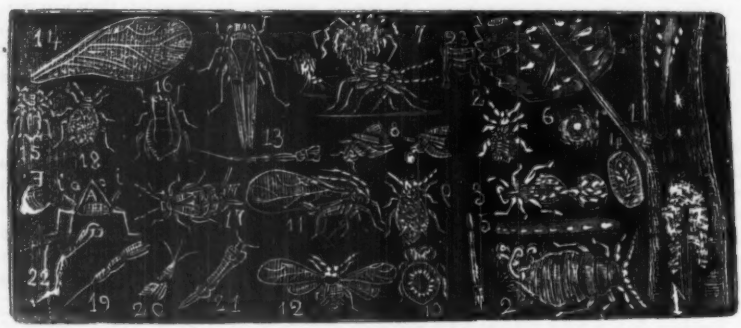


Fig. 1 represents a woolly species without honey tubes, no doubt belonging to the genus Erisoma, and perhaps identical with the *Aphis lanigera* of Hausmann, and quoted by Mr. Harris. Those are in small colonies, webbed in, or covered with fine, cottony threads, in the chinks of young suckers around the apple-trees, in knot-holes on the trunk, or axils of the leaves or young shoots from the main trunk of the tree. Fig. 2 represents the single insect; 2, the same, more highly magnified, showing the manner in which the white threads are expelled as excrement; other finer threads may issue from the spiracles or pores of the body, as stated by authors. Fig. 3 represents one pressed between two pieces of glass, exhibiting

the young (fully formed) floating in the liquids of the parent. Fig. 4 is one of them separated, showing the full formation of the young insect. Fig. 5 is a string of ovaria of increased size to the fully-formed creature. Fig. 6, a jelly-like globule, surrounded with fine, flocculent threads, found among the Aphids. Is it an egg? On the 23d day of November, 1857, in the presence of Mr. McFadden, I opened one, and discovered it filled with young, the eyes of which, and the contour of the body, plainly visible in each, all in a kind of sac or matrix of the parent. Why lay eggs at all, since our severe cold nights of November 19 and 20, when the thermometer was 6° below freezing, has failed to destroy the vitality of the parent? This species do not appear to have any winged ones among them. Alfred Smee, F. R. S., gives a figure similar to Fig. 4, and says: "This therefore shows me what sort of an egg we may expect to find, if the creature ever lays one."

Fig. 7 is a species noticed August 22, 1857, enveloping the lower branches of a noble specimen of the American Beech (Fagus ferruginea), like minute white-headed fungi, at first sight. The oscillating motion among the little, cottony tufts arrests the attention. On closer inspection, we find they are little creatures with their bodies erect, terminated by a plume of fine, white, tangled thread, with a few thicker and longer ones interspersed, busily engaged at pumping up the sac, by means of their suctorial apparatus. They have six-jointed antennæ, a short collar, ample thorax, body carried at a right-angle thereto, of an ochraceous color, and two greenish lines from the collar to the extremity of the body. On careful inspection, I cannot reconcile it with any of Westwood's genera. I consider it an undescribed species, at least. Those, no doubt, have winged individuals, having noticed rudimental wings on some specimens. Fig. 8, a globule of fluid of one, and a living aphid expelled from the other, of two individuals among a number on a cabbage leaf; same as Fig. 9, the Aphis brassicæ. Body, greenish, covered with a whitish, mealy substance, in dense patches, on the cabbage, called *mildew*. These were also active on this 23d day of November, on the heads of cabbage left standing in my garden, of all ages. I have failed to detect eggs among them, but have seen living aphids, and the pupa, also of ichneumonflies, contained in them. Fig. 10 shows the under side of one, having a flat, fringed disk, by which it was firmly attached to the epidermis of the leaf, apparently dead, though containing the pupæ of its brood alive (similar to the scale insect) within the globular, inflated carcass; in others, the pupæ of ichneumons, of which latter I also captured specimens while engaged at ovipositing. The winged aphid is similar (Fig. 11) to those of the A. vastator of Smee (A. rapæ of Curtis), Fig. 12 and 13, at rest and on the wing. On the warm afternoon of November 16, I observed them flying in clouds. The collar is of a dirty yellow (as also the abdomen), or brownish. The thorax high, of a shining black; antenna with a terminal, long, hair-like joint, variable (*see* Fig. 13). Fig. 14, shows the fore wing.

Fig. 15, a peculiarly square-shaped specimen, on the snowball. Fig. 16, a small, black fellow, found in great numbers on various plants—perhaps Smee's "little black rascal"—on the wing, called "smother flies." Fig. 17, from the Phlox divaricata. Fig. 18, also on the snowball, with short, honey tubes, of lead colored pubescency; proboscis short. Fig. 19, the promucis, or snout, with a long tongue, or setæ, as usually seen. (Fig. 20, Smee's figure, with a setæ and two sheaths, which I could not see.) Fig. 21, the same, with the setæ inclosed. Fig. 22, a leg; shin, hairy, bristled; tarsi, apparently only one-jointed; if there are two joints, as stated, the upper must be very minute. Fig. 23, the anal prolongation of some, and the honey tubes. Fig. A, a rear view of a winged specimen; *o o*, the deflexed wings, like a roof; *i i*, the honey tubes. E shows a peculiar projec-

tion on the sides of each eye, noticed in winged aphids. I have seen the male vastator, in his winged state, in connection with a wingless female, November 18.

I have seen both winged and wingless females produce their young alive, up to November 20. They were, on the 23d of November, congregated in dense groups on the under side of the few remaining leaves on my dwarf apple-trees, on the Kerria japonica, and other rosaceous plants, in their winged state, and all grades of wingless ones, with their snouts inserted into the leaves, unharmed by the cold, rain, and frost, and likely to withstand the severity of the winter, as shall be seen. But eggs I cannot find. Though Mr. Harris says "the winged plant-lice provide for a succession of their race by stocking the plants with eggs in autumn," and, after stating that those hatched in spring are all females, producing brood after brood to seven or more generations, without the intervention of a male, continues: "This extraordinary kind of propagation ends in the autumn with the birth of a brood of males and females, which in due time acquire wings, and pair; *eggs are then laid* by these females, and, with the death of these winged individuals, *which soon follows*, the race becomes extinct for the season."

Mr. Smee, after close scrutiny and patient investigation, asks the following questions: "Does the vastator lay eggs which hatch in spring? Does it hybernate and come out again in spring? Does it continue to propagate, notwithstanding cold, frost, and rain?" And adds: "Up to November 4, I have found the creature bringing forth its young alive."

This sustains my observations, and I will hazard the assertion that they do not lay eggs, that they do hybernate, and come out again in spring—at least, those species I have illustrated and examined.

The means nature has provided to check these creatures, and the remedies to destroy them, I shall defer for another article, this having become too lengthy, and much of interest connected therewith not said. Though so small in size, at most only one-tenth of an inch, their immense numbers make them formidable to the horticulturist, and therefore a thorough knowledge of them is desirable. By way of a moral, I'll conclude with the following couplet, by F. H. S.:—

"Daily vices, though small they be,
May make our souls with sorrow rife;
Like aphids on some plant or tree,
They sap the very springs of life."

GRAPES AND MILDEW.

BY WM. H. READ, CANADA WEST.

Mr. Editor: As your correspondent in the January No. of the *Horticulturist* has solicited my mode of preventing and destroying mildew, the great bar to successful growing and ripening of foreign grapes in the open air in this country, and as I have succeeded in producing them of very great excellence, even surpassing in grand appearance, large berries, and magnificent clusters, those grown under glass in my own neighborhood, and as your Rhode Island Horticultural Society and committee (who had some of my clusters on exhibition the past season) looked upon them "almost as a miracle," "and doubted of their having been grown in open air;" and again, from the fact that my grapes, both foreign and native, carried off the first and second prizes wherever they were shown—all this induces me to imagine there may be some virtue in my mode of treatment, and is the excuse I offer for the occupation of space in your highly esteemed and increasingly valuable journal.

First, a good rich border is indispensable. As soon as the frost has destroyed the foliage, cut all the present year's wood back to the third and fourth eye; lay the cuttings or some other brush directly under the pruned vine, and over this lay straw; bend down the foreign vine on this, and cover with straw again, holding all down till an assistant lays on an inverted sod; then cut more sods, and lay them like shingles on a roof, and the work is done, and your vines will not suffer from the heavy rains of autumn and spring, and their eyes will not be put out by hard substances, and the result will be, every eye will reward you with rich clusters.

Then the next enemy to be looked after is mildew; and for this monster I have constructed a formidable weapon after this fashion:

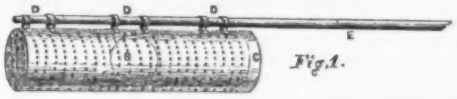


Fig. 1.

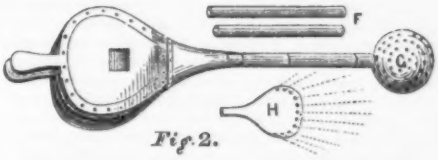


Fig. 2.

Apparatus Fig. 1 is a tin pipe, twelve inches long, three inches in diameter, with a button in one end, and a lid C, with a wide band, shutting well on the other, where the sulphur and ball are put in. The ball B is made of twine, and should be a little smaller than the pipe, and well stitched, to prevent its becoming loose. D D D are three thimbles, well soldered on, to receive the bamboo handle E, which can be from two to twelve feet, to meet the wants of the proprietor, but should not be less than two feet, in order to keep the sulphur from the operator's clothes. The holes for the escape of the sulphur, must be small; a common darning-needle will pierce them quite large enough, and they should be about half an inch apart, all over the apparatus. The ball in the apparatus acts as pulverizer of sulphur, accumulator of wind, and expeller of both.

Fig. 2, *Hand Bellows.*—F, pipes or joints made of tin, to fit nicely on the nose of the bellows, and by adding joints, any length desirable may be obtained. G, a tin globe, with a short socket to fit nicely on a joint, and through which the globe receives the sulphur for operation. The holes here must be very small, and half an inch apart all over the globe. For the grape-house, where the vines are trained singly up the rafters, a rose similar to that of a common watering-pot will be preferable, with small holes in the end, H. This will enable the operator to shoot close, and hit his mark without difficulty. If the sulphur adheres to the tin, and clogs the holes, slip in a marble, and shake occasionally.

Note.—When much work is to be done with dispatch, No. 1 is preferable, as it is simple and not liable to get out of order; and when the bamboo-handle is playing briskly through the left hand, and the ball going on to the tune of Fisher's hornpipe, the sulphur will be doing its duty, depend on it, flying like drifting snow before a hurricane.

[These are ingenious contrivances, respecting which all who have seen them in use speak with applause. We thank Mr. Read for his lucid description.—Ed.]

FRUIT GROWERS' SOCIETY OF WESTERN NEW YORK.

The winter meeting of this Society was held at Rochester. As usual there was a full attendance from a large portion of the counties embraced by the Society, from Syracuse to Buffalo.

There were several fine and select collections of fruit, among them 40 varieties of pear from Ellwanger & Barry, of Rochester, and there were other collections of apples and pears from R. B. Warren, of Genesee Co., John B. Eaton, of Buffalo, H. E. Hooker & Co., of Rochester, and W. P. Townsend, of Lockport. S. G. Crane presented a dish of Josephine de Malines pear, in perfect condition and of exquisite flavor. H. Spencer, of Yates County, exhibited fine specimens of the Tompkins County King apple; and J. M. Whitney, of Rochester, a basket of very large and splendid Jonathan apples.

The following is a condensed account of the discussions:—

Culture of the Apple.—L. F. Allen, of Buffalo, regarded Western New York as the finest apple-growing region in the United States—extending from Syracuse to Niagara River—and excepting the region about the eastern end of Lake Erie. This fruit, it was true, grew finely in various parts of the West, but the specimens lacked the high, fine, piquant flavor of the fruit here. As they grew larger, their flavor was diluted.

H. E. Hooker cited the character of the soil in Monroe County (about Rochester), as showing the influence of different soils—light at the north, heavier at the south—but he regarded the nature of the subsoil as much more important than that of the soil itself; if there was a good natural drainage, so that the water could descend freely, and not remain stagnant, trees would grow much better than on the finest and most favorable soil without such drainage—and that he could not therefore recommend a sandy or a heavy soil, as being best, until he knew the subsoil; and he cited several cases to prove the truth of this position, and where excellent management without this requisite had resulted in partial failure. P. Barry corroborated these remarks, so far as the importance of a dry subsoil is concerned, but he decidedly preferred a good strong loam to a lighter soil. He did not think apples so local in their character and adaptation as some regarded them. He had seen the Newtown Pippin and Esopus Spitzenburgh in Illinois, in great perfection, and a large cultivator there had assured him that if he were to plant a market orchard there he would select two-thirds Newtown Pippin. L. F. Allen agreed with others on the importance of drainage, but he would greatly prefer *natural* drainage as immeasurably superior to any artificial tile or other drainage; he would never in any case plant an orchard on soils naturally wet, with any amount of artificial drainage that could be given it. [A member present asked him, "What shall I do with my own heavy wet soil; I have come here on purpose to learn what I can do with it?" He replied, "Swop it away, and get better."]

H. E. Hooker had planted an orchard on a well-drained piece of land by ditching, but had never had good fruit from it; on land with natural drainage he had grown specimens of the finest quality. He did not think that the heavy, wet soils of the southern part of Monroe County, could be properly prepared for a successful orchard at a cost of a thousand dollars per acre. He alluded to successful *marketing;* small orchards for home use might do for a while on artificially drained lands, but never reliably on a large scale. T. C. Maxwell, of Geneva, entertained an entirely different view; he knew tile-drains at Geneva that had been in successful operation nineteen years without any defect or derangement; he had dug up old trees and found almost the whole of the roots above eighteen inches, and this whole amount might be easily rendered dry by tile-draining. P. Barry, in allusion to the *side-hill* drained by H. E. Hooker, and where his orchard had failed, alluded to the fact that springy side-hills are the most difficult of all kinds of land to render dry by drainage, and he feared this, after all, had not been drained at all effectually. This remark was again objected to by T. C. Maxwell, who had been entirely successful in draining a springy side-hill by the *regular* system of tile-ditches, placed at regular intervals, which conducted the water down hill by its shortest and most direct way, thus carrying off all the water of the springs. H. E. Hooker stated, in answer to a question, that on account of the irregular nature of his side-hill land, he was not able to give it a regular system of drainage; and, on those parts which did not seem to require it, the subsoil was so hard that the roots could not penetrate. He thought a deep soil important. C. S. Cole, of Spencerport, said that all artificial under-drainage was very valuable, and he would have an orchard on his land even if it was wet by the best drainage he could give it; yet, nevertheless, with tile-trains on an unfavorable land, only eighteen feet apart, his fruit was much inferior to that from trees grown on a good pervious soil with natural drainage. Dr. Bristol, of Dansville, mentioned the case of an orchard of his on land on Cayuga Lake, where the soil was favorable, and

where they had always flourished till two years since he bought them, and then they immediately died, not because *he* had become their owner, but because from the extreme wetness of the past two years the roots had been flooded, the water rising much nearer to them than ever before. If, therefore, a naturally good soil, but too wet, could be *sufficiently* artificially drained, it would be all that is necessary; the only question was that of *cost*, in placing the drains near enough together. L. F. Allen admitted the *practicability*, or rather possibility, of draining wet lands for orchards, but that the expense for *commercial* orcharding would render it very unprofitable. He thought there was not one-tenth of the land of Western New York that was *just right*—some of this, however, extended over large tracts; and he would recommend orchardists to select such tracts. Other regions would, however, answer a good purpose. L. B. Langworthy thought that one soil was about as good as another, but drainage of great importance.

CHERRIES.—P. Barry being called upon said he would recommend, as a select list for family supply, the Early Purple Guigne, Belle d'Orleans, Governor Wood, Mayduke, Black Tartarian, Black Eagle; and, for good late sorts, Belle Magnifique and Large English Morello. L. F. Allen inquired of him why, if this list were enough, he cultivated and offered so many sorts for sale? He replied that, if twelve different men were to select for themselves, they would each choose different lists, and probably consume all the different kinds they had; and, in fact, they had constant inquiries for sorts they did not propagate. L. F. Allen stated, as a proof of the difference in taste, as controlled by habit, that he had offered a man from the West, who had never seen fine fruit, some of his most delicious plums, when he replied, "I would rather have one wild prairie plum than a bushel of your sorts," and he positively refused to take them as a gift.

VARIETIES AND MANAGEMENT OF THE GRAPE.—P. Barry regarded the Isabella as the only one of *established* reputation that he would be willing to plant extensively in Western New York. L. F. Allen thought the Isabella would not ripen well in most localities, and he looked to earlier and newer sorts as likely to prove better. H. E. Hooker had seen other varieties he would prefer to the Isabella, but his experience had not yet been sufficient with them, and among these he named Diana. W. B. Smith, of Syracuse, and T. C. Maxwell, of Geneva, decidedly recommended the Isabella, if favorable localities could be selected. —— Peck, of Bloomfield, had a vineyard of Isabella that ripened the present very unfavorable year. As commonly grown through the country, with neglect in culture and pruning, the Isabella does not ripen. He keeps his grapes for winter in as *cool* a place as possible, in open barrels; he finds it better to have them open to the air than if covered. He uses tubs made of barrels sawed in two, as being preferable to baskets, which, yielding, are apt to bruise the fruit; he cuts the stems in picking, and is especially careful to remove every imperfect or decayed specimen, which will taint all the rest. To send off, he packs them closely in pasteboard boxes, packed tightly, so as not to shake or rattle; he sent them in perfect condition in this way to Iowa by express.

W. B. Smith, of Syracuse, had packed them in alternate layers of cotton batting in pasteboard boxes, in a cold cellar, and had preserved them till the 10th of June in good condition, except a slight taste of cotton. C. P. Bissell had packed them without cotton, and kept them in fine condition till March. C. Parsons, of Geneseo, had kept Isabella grapes till April; had put down generally about eight bushels (only for family use), and he had plenty all through winter. He had found them to keep best in a cold place, packed tight in boxes in alternate layers. The cotton and close covers kept them from being frozen, although in one instance the thermometer in the garret where they were placed had sunk to five degrees below zero. Several members spoke of the importance of handling them as little as possible, and of avoiding the use of baskets on this account; and also the necessity of *full maturity* to facilitate long keeping—that a slight frost does not injure a fully ripe grape, while it would injure or destroy an immature one. Bunches with *green* stems were not ripe. There is no doubt that different degrees of moisture in the different apartments used for packing them away may greatly affect the success of different modes, and the wetness of the season may exert a like influence. Several members mentioned instances where girdling, or tying cords around the bearing vines, had greatly increased the size of the grapes, and much hastened their maturity, but this portion of the vine was of course of no use afterwards; but the mode might be adopted where the renewal system is employed. This practice, however, as P. Barry stated, injured the part *below* the ligature, by withholding the nourishment which would otherwise descend to that part and to the root. As a proof of the importance of leaves to the plant and root, he stated that he had known of some cases where the mistaken notion of picking them off to let in the sun on the fruit had been extensively adopted, and it had destroyed the vines. *Country Gentleman.*

EDITORS TABLE.

THE WEATHER.—Up to the 10th of February, we had, in this region, weather which allowed out-door operations, but, on the 11th, the thermometer marked 14° above zero—a difference of 34° in twenty-four hours. Ice dealers began to rejoice, and commenced their operations on the 13th. The 14th opened with a snow-storm, and the cold continues as we write, on the 21st.

UNITED STATES AGRICULTURAL SOCIETY.—When our last number went to press, this Society was in session at Washington. Its sayings and doings have been chronicled sufficiently, but we must record the resignation of its late President, and the present of plate given to him. His speech was characteristic and forcible. In parting with Mr. Wilder, the Society has met with a loss. He understood how to keep attention alive, and employed means which his successor may not deem necessary to the end; but great publicity and a little telegraphing are often successful. Mr. Wilder understood the press thoroughly, and without that, such associations dwindle.

HYBRIDIZING THE VINE.—A communication from William N. White, Athens, Georgia, on this subject, came too late for examination this month.

VICTORIA REGIA.—Gold and silver fish, it has been proved, are of great importance to the perfect development of the leaves, by devouring the numerous aphides and insects that often infest their under surfaces. Hundreds of these fishes, therefore, may be annually placed in a tank soon after planting. The introduction of the *Limnæa stagnalis*, or water snail, has also been recommended, as it devours the slimy and mucous matter that always accumulates more or less in the tanks of tropical aquariums, and from experience of their usefulness in a large reservoir which contains some thousands, their introduction, in a sanitary point of view, would be extremely beneficial.

A novelty respecting the Victoria in England, is interesting. It is the cultivation of the plant in the open air at the exotic nursery of the Messrs. Weeks, at Chelsea, where it was grown, and flowered to considerable perfection during the summer of 1857, in an open tank, protected by an awning; not, however, in such a strictly natural state as the words "open air" may imply, for the water of the tank, it appears, was maintained at a temperature of 84° or 85° by a circulation of hot water below it. Still, we are far from being convinced that the plant is capable of being grown in the "open air" in England; and the complete failure, too, this year, of the plants in the marble basins of the greenhouse division of the Crystal Palace, tends even more strongly to confirm the opinion of the utter impossibility of attempting to acclimatize a tropical plant of this description.

Sir William Hooker admits that this plant does better in our tanks in the United States, than at Kew. In Philadelphia, we are much gratified to report the entire success of the new Victoria Regia house, lately erected by James Dundas, Esq., at an expense of some four thousand dollars; such liberality deserves more than a passing notice. Mr. John

Pollock, his intelligent gardener, informs us that flowers bloomed exactly six weeks after planting, from a root in the new tank, which is 24 by 30 feet; the house is extremely well lighted, and the tank is set out with a variety of healthy plants suitable to the scene; the whole presents one of the most beautiful sights that can be created by the art of man. The great Palm-house, too, has a tropical air nowhere else to be seen here. We feel quite proud of having such costly and well-cared for establishments in our midst, and of such gardeners as Mr. Pollock.

Novelty is the order of the day. We are to have a ship that will not create nausea, and *perhaps* a telegraphic cable to America. The horticulturists must not lag behind, and are not disposed to do so. We cut the following from the *London Chronicle*:—

"*A Feat in Cultivation.*—Mr. Richard Corke, of Maidstone, recently laid four wagers that by his system of cultivation he would produce more grapes, melons, cucumbers, strawberries, and vegetable marrows, or in fact any vegetable whatever, than could be done by another in the ordinary way, and won them all easily. These wagers originated in a conversation taking place in the company of several gentlemen, one of whom had presented Mr. Corke with some eyes of grapes and some vegetable marrow seed of fine quality. On making inquiry how they answered, Mr. Corke asserted that the canes of the vines would average more than twenty feet before the year came round, having been potted October 25, 1856, and planted out in a new hothouse just finished building on March 7, 1857. At first Mr. Corke wished to decline the wager, as he told the gentleman he must win to a certainty. Being, however, pressed, he accepted a bet for two rods to average twenty feet. This they considerably exceeded, and at the same time three other bets were made respecting the vegetable marrow, Mr. Epps and Mr. Bunyard, the well-known horticulturists, being appointed to survey and watch progress. The stem of the vegetable marrow was eight inches round; its vine, together with leaves and stems, measured upwards of eight thousand feet, the wager being that Mr. Corke would not produce more than sixteen hundred feet. Upwards of four hundred fruit were cut from this Leviathan marrow plant. This discovery will be made public in a treatise nearly completed. Mr. Corke's plan is so simple that a mere child, after some slight instruction, could produce the same effect."—J. G. Lomax.

Rapidity in Striking.—The *London Florist* says: "The rapidity with which new plants (even those which, a few years since, were considered difficult) are now struck and got ready for sale, is a strong evidence of improvement in this department. The seed trade has kept pace with that of the nursery, and affords proof that the better classes of vegetables are becoming more extensively known."

Pruning.—The skilful pruner will always have an object in view, and will see at a glance the results of each cut he is about to make. Practice alone can give him this foresight as well as dexterity in the art. It is requisite, also, that he should know how to regulate the energies of his trees, and the means at command to induce fruitfulness, to have the trees in a condition that, while one crop of fruit is coming to maturity, the organization of fruit-buds for the following season is going on; in short, to have the trees in a fit condition from year to year, to produce a crop of fruit. This may be accomplished by timely stopping and thinning the luxuriant shoots during the summer growth, by regulating the crop of fruit, and by root pruning, which is, in some soils, a very important operation; and every fruit grower ought to know quite as much of the root as he does of the branches of his trees. The above applies to trees growing too strong to be fruitful; but, on the other hand, when the trees are feeble from over-cropping, or other causes, close pruning is requisite, together with light crops, and assisting the trees by top dressing, which will have the desired effect.

Training.—The training of trees is in close connection with pruning; the one regulates the form of the tree—the other, the fruiting shoots and spurs. However plain the rules and directions for pruning may be stated, much must be left to the discretion of the operator, and which practice alone can teach. Preserve an equilibrium in the growth of every part of the tree. Be prudent in the use of the knife, and never amputate large branches if it can be avoided; to aim at a medium between excessive growth and feebleness; to remember that to organize fruit buds, every leaf, young shoot, and bud, requires exposure to solar light. Allow nothing to grow except what is required to carry on the proper functions of the tree, furnish bearing shoots, or to extend its branches.

Dioscorea Batatas.—In previous pages will be found a summary of the experiments reported respecting the Dioscorea, which will be read with interest. The time is near when the cuttings of the roots should be again planted. We are glad to know that there are some persons who are not discouraged by the trials already made, and we must wait another year before a decided judgment can be entered in the court of public opinion. From England we hear favorable reports. One cultivator has produced specimens weighing ten pounds, grown from strong roots. The French appear to consider the Dioscorea very valuable, and it is surely of too much importance to this country to be allowed to fail because interested parties have chosen to make an unnatural noise about it.

The English have been much pleased the past season to find the Catalpa, and the Gleditchia have ripened their seeds, a rare event in that climate. The Catalpa pods were attempted to be passed off at Willis's room for a new kind of kidney bean!

The Vine in Connecticut.—A meeting of persons interested in the culture of the grape, and the manufacture of wine, was lately held at Hartford. It was determined to form a vintner's association. Officers were elected, and it was resolved that "there may be as excellent, healthful, high-toned wines produced on *our* sunny hill-sides as upon those of any other country or State." A convention is to be called.

Mouldy Roots.—Attention is now being directed to the condition of the roots of sickly-looking trees, and it is found that much disease exists there which is unsuspected; hence the just remark that you should know as much about the condition of the roots as that of the limbs. A white mycelium often displaces the bark of many of the fibres; the microscope shows that the roots are entirely overrun with delicate, transparent threads which invade the young parts, sometimes forming a white felt, quite concealing the surface. This apparently unintelligible disease is a most dangerous enemy in old cropped grounds, and should be carefully looked after. Probably there will be found a remedy either in sulphur or charcoal.

Wheat Mildew was formerly believed to proceed from the common Berberry, but Dr. Lindley proves this to be an error.

"Subsoil Irrigation is a tried, lasting, and substantial application of art," says the *Cottage Gardener*, "in perfect unison with nature, in the shape of a system of cultivation which, in connection with agriculture, by means of which the great labor attached to watering gardens may be almost entirely dispensed with." If not too expensive, we agree with the writer, and give his *modus operandi* as follows:—

"In the formation of beds on this system, it will be necessary in the first place to 'dig

out the earth from one to two feet deep, so as to be able to form a bottom nearly water-tight, with sides about four feet six inches high, to prevent the liquid from running over until the earth has been moistened by it. The bottom may be of clay and chalk, or gravel, or lime, or any hard substance rammed; and upon the bottom put one row of half-drain tiles in the centre (that is to say, in the centre of beds three feet in width; or, if six feet, two rows), and loose, not jointed. There is an admission pipe sloping at one end to each rank of drain tiles, and a pipe at the other end of the bed to see when the liquid stands at four inches, and then to stop. The earth is then filled in as before, and proceeded with as in ordinary gardening. Water, or liquid manure, on being poured into the pipes, will pass along the whole length of the beds; and rising through the small spaces between the drain-pipes, partly by the capillary attraction of the mould, and partly by the attractive power of the roots themselves, will feed and nourish the plants.' So writes Mr. Wilkinson, the able promulgator of this new system of cultivation, in his pamphlet on subsoil irrigation; and that it does nourish and greatly increase the size and produce of roots, vegetables, &c., is an undeniable fact; and that it may be applied with equal advantage to the flower garden is sufficiently obvious."

The system is patented in England.

House Conservatories and Heating.—The reader will be attracted in the present number with the portrait of a small conservatory made in a bay window of our own dining-room at a small cost. With regard to a system of warming a greenhouse or conservatory attached to a house, there ought to be no difficulty in employing a house fire for the purpose. In the case introduced, the heat from the dining-room fire has answered perfectly. Many modes may be adopted according to circumstances. One has just struck us in a foreign journal:—

"A neat little lean-to house was placed against the garden side of a mansion. The floor was some five feet above the furnace that heated the scullery copper; a small flue was made underneath that floor, from the same furnace, and the draught let on or off, by means of dampers, without any bother with additional fireplaces or chimneys."

In another case, "A merchant built a nice residence for himself a few years ago. A neat flower garden was on the east side of the house, communicating by folding doors with the living-room, the floor being about two feet above the level of the garden. He wanted a greenhouse to be easily accessible, and easily managed. It was recommended to have it communicating with the above room, and between it and the flower garden; and to be heated from the kitchen boiler immediately beneath that room. After mature consideration, he placed his greenhouse on the west side of his house, that he might have something attractive on every side; and his plan would have been successful but for the fact that he had an unsuccessful smoke-consuming furnace, instead of passing his smoke out of the lofty chimneys. We have yet much to learn on this subject of warming, and on saving the heat now disseminated to the winds."

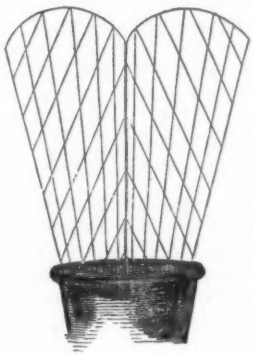
Dr. Gray's New Book.—Dr. Asa Gray has issued through his publishers an "Introduction to Structural and Systematic Botany and Vegetable Physiology," being a fifth and revised edition of the *Botanical Text-Book*, illustrated with over 1300 woodcuts. New York, Ivison & Phinney, 1858.

It is designed to furnish classes in the higher seminaries of learning, colleges, and medical schools, as well as private students generally, with a suitable text-book of structural and physiological botany, and is greatly improved both in matter and illustrations; in the chapters much has been entirely rewritten, and such changes made as the advanced state of knowledge required. It has a full glossary, and altogether is an improved and important

addition to the student's library. The teaching of botany is now made so simple and easy, that it is a reproach to persons pretending to education to be ignorant of its features.

Trellises, and Wire-Work Designs, of light character, suit well for such climbers as Maurandia Barclayana, Cobea scandens, Tropæolums, and Fuchsias of pendent habit.

Trellises fitted to pots, and covered with climbers, make noble window and terrace ornaments. The choice kind of Tropæolums are among the best plants for the purpose. To carry them over the entire surface, it is necessary to watch the young shoots as they make progress, and assist them on regularly. Fine lead wire will be found useful in all cases



where creepers have to be led over trellises. The thread-like fingers produce the best effect when trained over the interior of a sphere; but for plants of stouter growth, a flat and somewhat fan-shaped design will be most suitable.

Chinese Azaleas.—All the Chinese Azaleas strike freely by cuttings of the young wood, taken off close to the ripened shoots, planted in silver sand, and placed under bell-glasses, in mild bottom heat. As soon as well rooted the young plants may be potted off in good peat soil, mixed with a rather large proportion of silver sand. When in a growing state a little liquid manure is a great assistance to them. They require a light situation in the greenhouse or pit during winter, near the glass. They may be kept in the house until they have bloomed, but must be allowed a partial shade; many will do almost as well out of doors at the south, and all may be brought out as soon as the flower is past, but placed in a sheltered place. If kept in a cold pit through the winter, they should be brought into the house in February or March to flower.

Transactions of the Ohio Pomological Society.—The eighth session of this society includes two meetings, one at Cincinnati in September last, and one at Columbus in December. The official report makes a pamphlet of sixty-four pages, filled with matter of a suggestive character, and embracing reports from various counties possessing various climates and soils; the inhabitants of each, interested in the topics, will of course possess themselves of the transactions; some recommendations of fruits to be cultivated, &c., we take pleasure in disseminating.

The address of President Ernst is a lucid one, and deserves attention. Alluding to the mildew and rot of the grape, he says the fact that varieties which were healthy and per-

fected their fruit uniformly, do not do so now is suggestive of something wrong in their treatment, and he asks, "Is not the plant enfeebled in its power to produce fruit by the severe pruning to which it is subjected in our climate?" The valley of the Ohio he considers well adapted to the general culture of fruit, both for soil and climate, shelter, hill and dale, springs and streams, and that there they have, as yet, but few of the insects of the older sections of the Union to contend with, though some of the most mischievous have been imported in the egg, or chrysalis form, with trees, especially the peach worm, bark louse, and others.

Though immense numbers of trees are annually planted, the demand for fruit much more than keeps up with the supply, and prices are on the advance. Nurseries of hundreds of acres each, both here and in Europe, find a *ready* market for their trees in the great West. One gentleman said that every tree in his nursery fit to go out last fall, was sold in advance, and he was obliged to turn many customers away. There has been a growing feeling in Ohio that the trees brought into the State on the recommendations of their value in other sections, were not adapted as a general thing, to Ohio, and the eastern nurserymen are now turning their attention to the cultivation of varieties known to be valuable in the West.

Peaches.—Cook's Seedling Peach, a very large and beautiful freestone, resembling Crawford's late, ripens a few days earlier, a fine bearer, admirably suited for marketing. The Griffith, a large, yellow flushed kind, and a new seedling promising well, were commended. Carter's Large is a good market variety, a hardy and sure bearer. Other varieties are commented on, but we must refer to the pamphlet.

Grapes.—The Rebecca was received from Dr. Grant, and "although not ripe, the fruit is handsome and good." The Hall Grape, larger and better than Clinton. Berries of medium size, dark color; not equal to Isabella. A supposed seedling grape presented by W. D. Kelly, of Ironton, Ohio, is spoken of without decision. Mr. Negley reported that a German had planted a vineyard near Pittsburg of foreign kinds; the first crop was free from mildew, and Mr. Bateham, the excellent secretary, said it was not uncommon for European grape vines to bear one or two crops of fair fruit, but after the second or third crop the fruit almost invariably mildews.

Pears.—Walker, Jalousie de Fontenay, Andrews, Belle Lucrative, Jackson's Seedling, Kirtland, Summer Bon Chretien, Urbaniste, Flemish Beauty, and a pear from Pittsburg, named by the convention Fort Duquesne, are commended.

Apples.—Maiden's Blush, Carolina Red June, and Hagloe underwent favorable examination; and the opinions advanced in a discussion which took place on the deterioration of the apple fruit, by which many fruit-growers were becoming discouraged, is valuable. Mr. Bateham believes in the necessity of employing fruits of Western or Southern origin, especially of winter varieties. The discussion was closed by a remark from the President, which, while it marks the modesty of the speaker, should serve to stimulate all to continued investigations. He said: "For his own part he could only say that every year's experience only serves to exhibit the more clearly to his own mind how little he already knows in comparison with what remains to be known."

At the Columbus meeting the discussions assumed a very interesting character, and were devoted, in part, to the opinions respecting the value of kinds of fruit in different localities, where our space does not allow us to follow, but are of sufficient importance to receive attention from every newspaper in that fine State.

The Delaware Grape is thus noticed: "Specimens exhibited by Mr. Campbell, of Delaware; kept two months past their season, in very fine condition; the berries a little shrunk and their sweetness increased by evaporation of some of the juice. The bunches had been simply kept in a garret, thinly spread to prevent moulding. Dec. 10th."

In a communication from R. Buchanan, Esq., of Cincinnati, he gives his experience re-

garding the keeping of apples. He found a covering of six or eight inches of hay an excellent protection against severe weather when the thermometer was down to 6° above zero; others covered with a thick quilt were frozen hard, but, by leaving the cover on and keeping the room dark, the apples thawed without apparent injury. Above zero with this treatment he thinks they would be safe covered with eight or ten inches of hay.

The quantity of dried apples exported from Ohio is remarkable. One merchant in Portage County had already purchased *twenty-five tons* at an average price of six and a half cents a pound; and it was estimated that in the valley of Ravenna, with about six stores, there would be purchased last season *one hundred and twenty-five tons of dried apples* at the same average price. Beat this who can; it is equal to the income from a good wine district. From Lake County there was exported the past season $25,000 worth of green and dried apples; and from Kelly's Island, Erie County, 7,000 pounds of grapes and 3,600 gallons of wine are exported annually!

The report closes with a summary headed

"WHAT HAS BEEN LEARNED.—From an attentive perusal of the foregoing communications (and many more in the office of the State Board of Agriculture), we draw the following inferences:—

"1. That very great loss of fruit trees resulted from the extraordinary winter of 1855–6; nearly all the peach and heart-cherry being destroyed; and in some parts of the State very many apple-trees, but not so general a loss of these as many persons had supposed.

"2. As a general rule, there is not much difference in the *hardiness* of the different varieties of fruits, especially of peaches and sweet cherries; and in regard to apples, the difference is much less than was generally supposed; as many of those reported as tender in one locality, or by one writer, are classed as hardy by others. The principal exceptions seem to be in reference to the Belmont, Rhode Island Greening, E. Spitzenberg, and Roxbury Russet, which are reported as most generally injured by the winter.

"3. The effect of the previous crop had no perceptible influence in rendering the tree liable to injury by the winter; but more was dependent on the condition of the wood as to ripeness; those trees which, from richness and moisture of soil, made a late and luxuriant growth the season previous, were most injured by the winter. For this and other reasons, elevated or hilly lands are found most favorable for apples, as well as peaches and cherries.

"4. The damage to the apple crop by rotting, scab, rust, &c., is not by any means general, but confined mostly to the southwestern quarter of the State, the limestone, clayey soils, and is worst in the rich valleys or plains; but can generally be guarded against by a judicous choice of varieties, and proper pruning and culture.

"5. The varieties of winter apples best adapted for the districts just named are not those generally known and approved in Northern Ohio and in New York, but varieties of Western or Southern origin; as, Rome, Beauty, Rawles' Janette, Smith Apple, Milam, Limber Twig, Wine Sap, White Pippin, White Pearmain, Broadwell, &c. At the same time it is found that the popular Eastern and Northern fruits continue to succeed well in most parts of Northern Ohio, and on the more hilly and sandy lands in the eastern parts of the State.

"From the reports of twenty-five northern counties to the State Board of Agriculture, giving answers to the question, 'Which are considered the best six winter apples in your county?' the votes stand as follows:—

R. I. Greening	20	Roxbury Russet	16
Rambo	18	Baldwin	13
E. Spitzenberg	18	Y. Bellflower	11

"The next in order were Belmont, G. Russet, Canada Red, and Newtown Pippin, from six to ten votes each.

"The reports from the southern half of the State (and western central) were less nume-

rous and more diverse in character, recommending more or less of the southern list first above given, along with a few of the northern, according as the writers were more or less extensively acquainted with varieties."—*Secretary.*

To Preserve Wooden Labels.—We know enough of the confusion arising in collections through the loss of labels, when, from want of timely renewal, they decay at bottom. During the past year I set my wits to work to find out a better plan of charring them to render them durable, and, from present experience, I believe I have hit upon a good plan. Before detailing my own way I will just mention that the plan pursued previously, and which I was taught while in a London nursery, was to dip them in melted lead; this did not answer very well, and was often inconvenient. The way I have hit upon is, to my belief, original, and is as follows: Having made the labels, before they are painted get a dish or vessel of any size and suitable depth, say four inches deep, which fill with turpentine. In this you may dip the labels, a handful at a time, immersing them as deep as required, and then take them one by one and apply a light to the point, this will char them well superficially, if properly done, and much more neatly than any other plan I have seen. When so charred they appear to be very durable.—*Jaques.*

Planting Ship Timber in Florida.—A plantation of Live-oak, made by some careful public officer in West Florida, is said to be flourishing finely, and Colonel Claiborne publishes a letter, in which he proposes to establish extensive plantations of this oak on reserved lands in Louisiana. He says the Live-oak grows there with astonishing vigor and rapidity. In seven years from the acorn it forms a beautiful shade. In twenty years it has the tenacity and durability of iron, and is ready for the axe of the ship-carpenter.

The Cherry Tree.—In several forms it has been announced that the cherry does not succeed in many western localities, and we have been looking out for some experienced person to give the proper directions and information on the subject. Dr. Kirtland has come to the rescue; in a late *Ohio Cultivator* he contends that it is an established maxim that wherever a chestnut-tree has grown, the cherry and the peach will thrive; he thinks that if some of the Cincinnatians would enter upon the cultivation of the cherry with half the zeal and devotion that hundreds are doing with their vineyards, means would be devised for overcoming the obstacles. They have almost all kinds of soils, exposures, and elevations. On the prairies permanent walls of suitable height would be found a comfort and advantage to every householder, and with this protection, and trenching, and under-draining, with deep borders of soil adapted to the wants of the cherry-tree, he thinks they might possess this beautiful fruit. The walls may be cheaply constructed of limestone, sand, and gravel, according to the directions of Fowler's book. *Shelter* is gradually becoming known as one of the greatest appliances of cultivation. All are convinced that under-drainage is all but essential to fruit culture—with that and shelter we firmly believe fruit can be grown everywhere to advantage.

The new Part, the fifth of the splendid *Flora of Tasmania*, by J. D. Hooker, M. D., F. R. S. (4to. London), completes volume one, terminating with Conifers. The second volume will include Endogens and flowerless plants. It is impossible to conceive anything more admirable than the plates, especially those of the singular genus Richea, and of the curious Tasmanian Conifers, to which alone, including Casuarina, five plates crowded with details are devoted. The letter-press is, as usual, rich in botanical criticism and elaborate researches into structure and affinity. Works like this will place Australia in a better scientific position than even the mother country.

The Victoria Pear is so highly eulogized in the *Gardener's Chronicle* as to make it an object to test it here. That periodical says: "It stands in the highest class, the flesh being perfectly melting to the core. We understand, moreover, that it is a very great bearer, it having been necessary to prop up the original tree, in order to prevent the branches breaking under the weight of their crop. Its habit is thorny and very robust. Its season in ordinary years is February."

Mr. Editor, if we could but reduce the Rose lists! Here are twelve good ones which will suit most: *Général Jacqueminot, Prince Léon, Lord Raglan, Géant, Baron Prévost, Bourbon Queen, Paul Joseph, Gloire de Dijon, Dupetit Thouars, Augusté Mie, Souvenir de Malmaison*, and *William Griffiths*. These are free flowerers, hardy, and first rate, and of different colors.

Rosa Malheur.

P. S. Why don't you tell your parish of the most beautiful yellow rose extant? It is very scarce, but where is such a rose for the garden or greenhouse as the inimitable yellow Viscomtesse de Cazes?

R. M.

[There is scarcely a better, but the gardeners won't let it be much known because it is so scarce. We were about to recommend it, but Rosa has forestalled us. It is a delicate grower, with a deep orange colored centre, and very superb.—Ed.]

It is to be regretted that Sir William Hooker's very useful *Journal of Botany* has ceased to appear. Under one form or another, the learned author's scientific correspondence has been given to the public ever since the year 1827, and the loss of it will be felt too soon. Nor, indeed, with the exception of the *Journal* of the Linnæan Society, and Taylor's *Annals of Natural History*, does there now remain any English medium through which short papers on systematical botany can be communicated to the public.

Mr. Sowerby's *Grasses of Great Britain* continue to appear with regularity. Part Third contains figures of Phalaris arundinacea, Ammophila arundinacea, and three Phleums. The letter-press fully justifies the favorable account formerly given of it.

Prof. Ettinghausen has communicated to the Imperial Academy of Sciences of Vienna, a paper on the "Nervation of the Leaves of Celastraceous Plants." In this memoir, the learned author enters minutely into the distribution of veins in leaves, reducing them to certain typical forms, thus applying his principles to a practical purpose. Ten beautifully nature-printed plates of leaves, and many wood-cuts prepared by the same ingenious process, accompany the memoir.

Close upon the number of the *Flore des Serres* for April appears that for May; so that the writer is making up his arrears. The new number contains several excellently drawn florist's flowers belonging to the Rose, the Tree Carnation, Early Tulips, and Hyacinths, together with a representation of the seed-vessel of a Bootan Rhododendron called macrocarpum, measuring three inches in length. The editor exclaims, What then will the flower be?

GOSSIP.

—— In the Jardin des Plantes, at Paris, is a sun-dial bearing this inscription: "*Horas non numero nisi serenas*" (I count only the sunny hours)—a pretty and appropriate motto. The merry mortal forgets that even sunny hours are numbered by a shadow!

—— It is well to know and remember that iron railings should never be inserted into stone with lead; the action of the atmosphere keeps up a galvanic action between the two

metals, ending soon in destruction. Zinc is better, and paint formed of the oxide of zinc preserves iron exposed to the atmosphere infinitely better than the ordinary paint, composed of oxide of lead. The new mode of immersing iron railings and wire in melted zinc, called galvanizing it (which is an erroneous but convenient term), answers a very good purpose.

—— The electric light so much talked of lately, was tried on the Thames, to light the workmen employed on the new Westminster Bridge, and with a result that appears fatally objectionable. Its light produces shadows so very black, that the workmen were continually betrayed in their movements, and fell off the stages into the water.

—— Achimenes in Baskets.—For the decoration of a stove or conservatory during summer and early autumn, we know of no more useful plants than Achimenes, and if carefully removed to a cool temperature as soon as the blossoms expand, and shaded during bright sunshine, they will remain longer in beauty than in a hot stove. About the beginning of February, put the tubers in pans filled with light, sandy soil, and place in a gentle heat, where they soon vegetate. After shoots are an inch long, they should be carefully removed, selected, and finally planted. Employ square baskets (eighteen inches by six inches), stuffed with sphagnum, the soil within composed of about equal parts of turfy loam, leaf-soil, and decomposed manure, with a liberal admixture of sharp silver sand. The moss being rolled tightly round the rim, keeps in its place by means of wire pegs, the whole being finished off with the shears. Insert the plants two inches apart, water, and remove to a pit with a light, moist atmosphere, where they grow freely. Stop at the second and fourth joints, to secure compact, bushy specimens; after the second stopping, then stake, and the outer row of plants peg close over the rim of the basket. At same time, furnish with a top-dressing of thoroughly decomposed manure mixed with silver sand; after that, with the exception of being regularly tied, they receive the same treatment as before, until such time as they should flower, when they are removed to the conservatory, care being taken to prepare them for the change by rendering it gradual. When all are fully expanded, they will be a complete mass of blossom; in short, floral balls. All varieties are not alike adapted for growing in baskets, but longiflora and its varieties may be used with safety.

—— A grand National Rose Exhibition is to be held in London, this spring—the first of its kind. It will afford a fine opportunity for making a selection.

—— Lighting mines by gas is now practised in England, where its importance may be inferred from the fact that the estimated cost of oil and tallow burnt in the mines of Great Britain, is two millions and a half of dollars per annum. In one Cornish mine, the expense is thirty-five thousand dollars a year. Gas has been forced down the shaft by pressure—a depth of seven hundred and eighty feet—with entire success to the operation.

Answers to Correspondents.—(D. P. B., College Hill, Ohio.) The most satisfactory mode of forming a plantation for shelter or screens of the kind you mention, is to plant an irregular-formed strip inside the boundary line, varying from ten to forty feet in width, and setting it quite thick with young trees, chiefly evergreens. In the first place, let the ground be well broken up by deep and thorough ploughing, and, if possible, subsoiled. Procure trees of a small size—say from one foot to eighteen inches in height—and plant from three to six feet apart; this will give a satisfactory and speedy growth. The most suitable evergreens for this purpose are the White and Austrian Pines, Norway, Balsam, and Scotch Firs, American Arbor-Vitæ, and Hemlock Spruce. It will be advisable to plant about one-third of the number deciduous trees, such as any of the free-growing Poplars, Maples, Willows, Larch, &c. These can be thinned out as the evergreens grow up.

In planting, set similar kinds in small groups, which will produce a better effect. Of course, the individual beauty of trees cannot be developed by this mode, unless they are carefully thinned out as they increase in size. The advantages of this method of planting

are many; the plants being young, will grow at once with vigor, and they can be procured at a low cost at any of the wholesale nurseries. Without a plan of your grounds, we cannot be more definite. We would, however, advise you (and we would extend the advice to all who are about improving) to prepare a rough plan and description of your place, and inclose it in an envelop addressed to William Saunders, Landscape Gardener, Germantown, Pa., who, by his writings in these pages, and by his operations in various parts of the Union, has shown himself to be a master of his art.

A. McClintock wishes to have a hedge of Arbor-Vitæ both *thick* and *high*. This will not be exactly as difficult as the case of the boy who wished to eat his cake and keep it also; but it will require a little *time*. Cut back every June and September, leaving the tops at each clipping a little longer than at the previous one, and in a very few years we can promise you one of the most practicable hedges known to planters; its only disadvantage is, that it is brown in winter. Like all others, it demands regular attention. If one could live a century or so, a hemlock hedge would be a more desirable thing.

Apple Budding.—Will you or some of your correspondents please tell me how it will do to make dwarf apple-trees by budding Paradise apple on standard and then working apple on the Paradise again? I have some now budded with Paradise, and would like to have the advice of some one who has had experience before working good fruit on them.

J. B. R., *California*.

[Have any of our correspondents had any experience? Many thanks for the "Camas" and "Wappatoo" seeds.—Ed. H.]

Berberis Darwinii.—*Rustic Adornments.*—(Amateur, Watertown.) Small side-shoots of B. Darwinii slipped off with a heel strike best any time in summer, covered with a bell-glass and kept cool. Perhaps you kept your slips too moist, or so damp that they rotted from want of air at times.

Charles Brackett, Rochester (Indiana), writes as follows: "Inclosed I send seeds of an ornamental vine which, for the past two years, has appeared on the Tippecanoe, eight miles above town. It is a beautiful thing. My attention was called to it by Bart Hamlet, an old pioneer. If you give it a name, let it be named after old Bart, as he is dead now; and I would like to see his name survive him in this beautiful vine which he brought to my notice. Charles Brackett."

"P. S.—Bart called it the feather vine. Let Dr. Brincklé try some of the seeds, if convenient. C. B."

The seeds are those of a well known vine (the *Clematis virginiana*), and yet, being well known, there should be no reason why poor Bart Hamlet should not be forever remembered for calling attention to it:—

"And what so poor a man as Hamlet is
May do, God willing, shall not lack."—*Hamlet*, Act 1.

The first player says to Hamlet, "I hope we have reformed that indifferently well," and so we would reform "indifferently well" the nomenclatures of the botanists who, by the way, do not act fairly in giving the names of plants (and pears) to their friends exclusively, else should we have fewer hard words. Griesbreghtii and Warczewickzii should yield to Ophelii and Hamlettii; and we therefore hereby authorize Mr. Brackett to christen the *Clematis virginiana* with a shorter name, the *Hamlettii*, in memory of "pioneer Bart," dismissing it with two lines from Shakspeare:—

"*Laertes.* Farewell, Ophelia; and remember well
What I have said to you."—*Hamlet*, Act 1.

(James Taylor.) The ashes of anthracite coal are useful to some fruit-trees, as the cherry

and grape, but not specially to garden crops, except it be to assist in disintegrating the soil. Apply to the trees by top dressing, in the fall, or digging it in in spring. Bituminous coal-ashes contain valuable organic manures for all trees and shrubs, and especially evergreens. Unleached wood-ashes are too strong for most of your garden purposes; leached, they are applied with great advantage to onions, peach-trees, &c., and as a top dressing for grasses, especially clover.

As usual, various inquiries have been received too late for answer the current month.

CATALOGUES, ETC., RECEIVED.—Cherry Hill Nursery, Westchester, Pa., spring of 1858. This circular embraces a long list of the best strawberry plants, priced, and trees, Osage Orange, Silver Maples, &c. &c. Joshua Hoopes, proprietor.

Descriptive Catalogue of Fruit Trees, Evergreens, Roses, &c. &c., at the Columbus Nursery, by M. B. Bateham & Company, 1858. An admirable Catalogue, prepared by one of the best informed nurserymen of the West.

Descriptive Catalogue of Fruits, by A. Fahnestock & Sons, Toledo Nurseries, Ohio, for 1858–59. Every description of fruit that thrives in the climate is here to be found, with directions.

J. M. Thorburn & Co.'s Descriptive Catalogue of Vegetable and Agricultural Seeds, &c., Garden, Field, Fruit, &c., to which large additions have been made, this year, of tested novelties. New York, 1858.

Descriptive Catalogue of Fruit and Ornamental Trees, Shrubs, Roses, &c. &c. For sale by Samuel Cofman, at the Spring Grove Nursery, near Carroll, Fairfield County, Ohio, for 1857 and 1858. A very full descriptive catalogue of a large and varied collection, including strawberries and the smaller fruits.

Illustrated Catalogue of Microscopes, &c. &c., for sale by James W. Queen, 924 Chestnut Street, Philadelphia. Mr. Queen has a fine collection of philosophical instruments, spectacles, &c. &c. We have lately examined and tested some of his thermometers, of which he has an extraordinary variety, and found them correct. Mr. Q. has good thermometers as cheap as four dollars the dozen, very neat and handsome; the glass tube is red, which displays the mercury readily to the eye.

VERBENAS.—We are again enabled to commend the annual catalogue of Dexter Snow, of Chicopee, Mass., who first inaugurated the system of devoting his attention to a single speciality. He has introduced the verbena extensively, sending it by mail or express with great success, and, we hope, profit. This spring, Mr. Snow offers even greater facilities than formerly, and enumerates six new varieties as important acquisitions, viz: Madame Abdt, Geant des Battailes, Lady Palmerston, Celestial, Le Gondolier, and Charles Dickens. We advise our friends to inclose a stamp, and procure Mr. Snow's sensible catalogue, in which they will find directions for cultivating this garden favorite.

PEABODY'S PROLIFIC CORN.—A circular setting forth the extreme value of this corn has been received. If Mr. P.'s strawberry, the coming season, equals the picture in the *Patent Office Report*, and elsewhere, we may "acknowledge the corn."

Horticultural Societies.

MICHIGAN STATE HORTICULTURAL SOCIETY.—At a meeting of the Standing Fruit Committee for the examination of seedlings, it was resolved to recommend for trial an apple presented by B. Hathaway, of Little Prairie Ronde, under the name of Pawpaw Seedling.

Description.—Size, medium. Color, red, obscurely striped. Flesh, yellowish, a little coarse, juicy, mild, subacid, sprightly. Quality, "very good."

The following persons contributed specimens of fruit for the examination of the Society: A. C. Hubbard, Detroit: Jeremiah Stanard, Ionia; Samuel Johnson, Kalamazoo; J. T. Wilson, Jackson; D. McKee, Kalamazoo; Joshua Clemens, Leoni; Geo. W. Taylor, Kalamazoo; B. Hathaway, Little Prairie Ronde; E. Merrill, Kalamazoo; T. T. Lyon, Plymouth; George D. Rice, Kalamazoo; S. S. Cobb, Kalamazoo; A. Buell, Kalamazoo.

The thanks of the Society were tendered to the corporation and citizens of Kalamazoo, for the free use of the rooms, tables, fuel, lights, &c., during their sessions. Adjourned.

HEZEKIAH G. WELLS, *President.*

T. T. LYON, *Secretary.*

List of Apples recommended by the Society for General Cultivation.

American Summer Pearmain—Amateur.
Benorie—Market.
Baldwin—All purposes.
Belmont—Do.
Cooper—Market.
Domine—Do.
Early Harvest—All purposes.
" Strawberry—Amateur.
Fameuse—All purposes.
Gravenstein—Do.
Hawthornden—Market.
Hubbardston Nonsuch—All purposes.
Jonathan—Do.
Keswick Codlin—Market.
Late Strawberry—All purposes.
Lady—Amateur.
Maiden's Blush—All purposes.
Pippin, Golden (of Michigan)—All purposes.
Pippin, Fall—All purposes.
Swaar—Do.
Seek-no-further (Westfield)—All purposes.
Spitzenburg (Esopus)—Do.
Spitzenburg (Flushing)—All purposes.
Spy, Northern—Do.
Yellow Bellflower—Do.
Peck's Pleasant—Amateur.
Poume Gris—Do.
Porter—All purposes.
Pearmain (Herefordshire)—Amateur.
Rhode Island Greening—All purposes.
Red Astrachan—Market.
Red Canada—Do.
Rambo—All purposes.
Russett, Golden—Do.
" Roxbury—Market.
Sine Qua Non—Amateur.
Summer Rose—Do.
Summer Queen—Cooking.
" Sweet Paradise—Amateur.
Sweet Bough—All purposes.
Sweeting, Jersey—Do.
" Spiced—Baking.
" Talman—Do.
St. Lawrence—All purposes.

List of Apples that Promise Well.

Beauty of Kent—Cooking.
Duchess of Oldenburg—Market.
Dyer—Amateur.
Fall Wine—Do.
Hawley—All purposes.
Norton's Melon—Amateur.
River—Amateur.
Sweeting, Golden—Stock.
" Bailey—Do.
" Danver's Winter—Do.
" Ladies'—All purposes.

List of Apples unworthy of Cultivation

Gilliflower Black.
" Striped.
" Scalloped.
Alexander.
Twenty-Ounce Pippin.
Pumpkin Sweet.
Romanite.
Cheeseboro' Russet.
Pennock.
Tewksbury Blush.

Recommended for Further Trial.

Green Newtown Pippin.

The Society then discussed and adopted the following resolutions:—

Resolved, That this Society appreciates the horticultural labors of Dr. John A. Warder, and that we look with much interest to his forthcoming work on fruits, and that the President of the Society be requested to send him such specimens of the fruits now on exhibition as he may deem proper, correctly labelled for his inspection.

Resolved, That this Society would strongly urge the necessity and propriety of laying out specimen grounds upon the farm of the State Agricultural College, to be filled up with fruit and ornamental trees, shrubs, and plants, to be used as guides to correct nomenclature, and for the exemplification of the most approved modes of pruning and culture.

Resolved, That this Society adopt as their standard of nomenclature, the recently revised edition of Downing's *Fruits and Fruit-Trees of America.*

Notes for the Month.

MARCH.

VINEYARD CALENDAR.

BY R. BUCHANAN, CINCINNATI, OHIO.

Pruning the vines should be finished by the middle of this month. If cut at a later period, they would be injured by bleeding, or flowing of the sap. The method of pruning has been given in former articles. The spur and bow system is generally adopted when the vine is trained to a single stake; but, on trellises, the horizontal and bow-shaped training is of course the best. Some of our cultivators are now trying experiments to prevent mildew and rot, by long training, or leaving more wood than formerly. Others have no faith in that remedy for diseases, which they consider mainly atmospheric. Stakes may be driven the latter end of this month, when the frost is out of the ground, and the vines tied to the stakes with willow ties, in soft weather, when the vines are pliable, and will not break by bending. The forenoon is the best part of the day for this purpose.

It would be too soon to plough or hoe the vineyard this month, unless the season should be unusually early, and the ground warm and dry towards the latter end of the month.

The Wine.—Keep the casks bung full, and the bungs tight. Burn sulphur matches in the empty casks, and drive the bungs in tight. These matches are cotton or paper strips, about an inch wide, saturated with melted brimstone. Two to four inches to each cask, according to its size, will be sufficient. The strip is attached to a wire about a foot long, and, when lighted, held in the cask until consumed, and the bung is then driven in tight.

BY WILLIAM SAUNDERS, GERMANTOWN, PA.

The continued open weather has afforded ample opportunities for preparing the soil and forwarding operations for early spring cropping. The value of such crops as Onions, Peas, Parsnips, Potatoes, &c., depends very much upon the period of sowing and planting. Onion seeds sown on the 10th of March have produced a fine crop of large bulbs, when, from seed sown on the 26th of the same month, the produce was only fit for small sets. The potato crop cannot be relied upon unless planted early, and the advantage of eight or ten days in spring is frequently all the difference between failure and success. It is necessary, however, to keep in view that tender crops, such as Lima Beans, Dwarf Beans, Corn, Okra, &c., do not gain by being planted before the soil has attained considerable heat, and the atmospheric temperature warm and settled.

Every auxiliary towards getting the ground in early working condition should therefore be resorted to; such as throwing the surface up in ridges, and, if of a clayey texture, frequently turning it over, that it may be the more thoroughly penetrated by frost; and, it should further be remembered, that working and trampling on adhesive soils while they are wet, will render all previous preparation entirely useless; and it may be well to remind beginners that all permanent and remunerative improvement in tenacious soils must be founded upon a proper system of under-draining.

Flower Garden.—The flower borders should be forked over (not dry with a spade), and, as the free-growing herbaceous plants soon extend themselves beyond due limits, the plants may be slightly reduced. A dressing of guano, at the rate of 400 lbs. to the acre, will invigorate growth. Hardy herbaceous flowering plants have been much neglected in modern flower gardens. In a future number we may give a list of such as are most desirable. The lawn will also be benefited by an early application of guano, so that the spring rains may dissolve and carry it to the roots of the grasses; this will encourage an early vigorous growth, and, in connection with frequent mowing, will form a close turf, able to withstand the scorching effects of long-continued dry weather.

Greenhouse and Conservatory.—The interior of ornamental plant structures can be much improved in appearance and rendered much more interesting by having graceful festoons of climbing plants depending from the roof. A series of curved iron rods covered with

vines produce an agreeable effect, and break up the usual monotonous internal arrangement of glass houses. Plants for this purpose may be planted out in small prepared borders or beds of soil, but, as a matter of convenience, it is more desirable to plant them in pots or boxes of suitable dimensions, which can be placed in positions where their appearance will not be conspicuous. The limitation of root room is also of advantage in causing a tendency to flower, and diminish the luxuriance of wood growth, which is a constant source of annoyance when the roots have unlimited freedom. There are many hardy climbing plants well adapted for such situations when grown in pots. The Bignonia Capreolata, which is rather tender for northern latitudes, is a fine evergreen climber; so is the sweet yellow Carolina Jasmine, Gelseminum nitidam. The Akebia quinata, five-leaved Akebia, with clusters of small blue flowers and beautiful foliage, and the Chinese Wistaria are also very suitable. Amongst others more strictly requiring greenhouse protection may be mentioned the following: Ipomea Learii, and I. Horsfallii, Bignonia Lindleyii, or Picta, as it is named in some collections, Passiflora alata, a vigorous grower, P. racemosa, P. Kermesina and P. Loudonii, Tacsonia manicata, Lophospermum Hendersonii, Kennedya prostrata, K. monophylla, K. Marryatta, and K. nigricanus, Sollya heterophylla, Tropæolum Lobbiana flowering all the winter, Dolichos lignosus, Eccremocarpus scabre, and Brachysema latifolia. Plants of more tender constitution, and usually grown in hothouses (but which do as well in a greenhouse when attention to watering during winter is given, requiring to be kept very dry, that is, they should receive no more water than sufficient to preserve them from shrivelling during the coldest season), are the following: Mandevilla suaveolens, a very choice sweet-scented flowering plant, Allamanda cathartica, Stephanotis floribunda, Bignonia venusta, Combretum purpurea, Hoya carnosa, and H. imperialis, Schubertia Graveolens, and Stigmaphillea ciliata. Much of their beauty depends upon the care and skill exercised in training. While no appearance of negligence should be tolerated, still there should appear a natural freedom of growth; this will in some measure be secured by tying in only such shoots as are strong, leaving secondary laterals to hang loosely around. Climbing plants are frequently objected to on account of their harboring insects, and the difficulty of keeping them clean. When this happens they should be pruned severely and the plant thoroughly cleaned, or, which is one of the advantages of having them in pots, they can be substituted by something else.

Pleasure Ground and Shrubbery Plantations.—The repeated failures that have attended the introduction of many new evergreen trees and shrubs is a matter of much discouragement to those who are anxious to give variety to their ornamental grounds. Such trees as the Cryptomeria Japonica and Deodar Cedar are too tender for this latitude, and, indeed, all to the north of the Potomac. It is true that isolated instances may be found where they stand with slight injury, but that no dependence can be placed in them as permanent trees is shown by the fact that, after growing for several years and attaining a height of ten or twelve feet, they have ultimately succumbed. Evergreen shrubs have suffered the same fate; the Aucuba Japonica, English hollies, Rhododendrons, &c., have not, as a general feature, made any mark in our pleasure grounds. Still there is no lack of material, and if, as we have frequently recommended, we would plant more liberally of those that are well known to be perfectly hardy, we might, in connection with thick planting, be enabled to succeed with those choice evergreen shrubs that are only found to luxuriate in the shelter of larger growths. The idea of allowing each tree and plant sufficient space for full development is one of the principal errors with inexperienced planters; their lawn is dotted over, and all immediate and ultimate effect destroyed. It may be questioned whether there is not more real beauty in the combination of forms than in individual perfection in trees.

A fine old oak is an object of admiration when standing apart from its fellows, but the varied outline, diversity of foliage, and numerous curves produced by a group, is none the less pleasing. This is a subject that, however tempting, we cannot here more than merely mention. Ornamental plantations should be treated as entirely distinct from the lawn proper. Let a portion of ground be set apart for this purpose, and thoroughly trenched and enriched, then plant very thickly with such well known rapid growing trees as Norway and Hemlock spruce, White Austrian and Scotch pines, Arbor-vitæs, Red cedar, &c. When these afford a sufficient shelter the margins may then be filled with all the smaller shrubs, not omitting that valuable shrub the Mahonia aquifolia. A few deciduous undergrowths may also be added. The lawn will then admit of being thoroughly and satisfactorily maintained as a close green turfy surface, with here and there an individual tree showing full development. Variety, combined with utility, will then be produced; but the planter must be imbued with the elements of beauty, and his taste cultivated before attempting to produce these pleasing future effects.

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